THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR ....JOHN HIEBERT........

TITLE OF THESIS ..A MODEL FOR EVALUATING UTILIZATION OF....

FACILITIES PROVIDED FOR INDUSTRIAL-......

VOCATIONAL EDUCATION PROGRAMS............

DEGREE FOR WHICH THESIS WAS PRESENTED .......M.ED.........

YEAR THIS DEGREE GRANTED ....1973..........

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

THE UNIVERSITY OF ALBERTA

A MODEL
FOR EVALUATING UTILIZATION OF FACILITIES
PROVIDED FOR INDUSTRIAL-VOCATIONAL EDUCATION PROGRAMS

by

© JOHN HIEBERT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

IN

INDUSTRIAL ARTS

DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION

EDMONTON, ALBERTA

SPRING, 1973

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "A Model For Evaluating Utilization of Facilities Provided For Industrial-Vocational Education Programs," submitted by John Hiebert in partial fulfilment of the requirements for the degree of Master of Education in Industrial Arts.

ABSTRACT

This study was designed to identify the operational factors which influence the utilization of high school building construction facilities and to determine the elements which are important to evaluating their utilization.

To obtain the required data, a 92-item questionnaire was developed and administered to two defined samples of 27 principals and 31 building construction teachers of comprehensive high schools in Alberta that offered an active building construction program. Completed and returned questionnaires numbered 24 for the principal sample and 22 for the teacher sample representing a response of 88.8 percent and 71.0 percent, respectively.

The results of the study revealed that 35.9 percent of the factors which were reported to be important to an evaluation of the utilization of high school building construction facilities were also reported to have a significant influence on the utilization of these facilities. Of the factors represented in this category, teacher competence in the program was reported to be the most significant factor that should be assessed in evaluating the utilization of high school building construction facilities. Other factors in this category for which a frequency of response of more than 78.9 percent was reported were (in rank order): student attitude toward the program, the educational philosophy of the principal, and the instructional methods used by the teacher.

This study also investigated the theory of evaluation to identify components that might be applicable to implementing an evaluation of utilization of building construction facilities provided for the high school program. Stufflebeam's Context, Input, Process, Product Model (CIPP) and his design to implement evaluation contained acceptable criteria for this purpose.

A macro model was developed to provide a format to identify the factors which are important for evaluating the utilization of high school building construction facilities and to define the type of evaluation each factor would be subjected to. A micro model whose dimensions were similar to the macro model was then developed. Its structure, however, was designed to compartmentalize the degree of influence the selected factors had on the utilization of facilities for the high school building construction program.

The parallel dimensions of the macro and micro models, together with the importance and influence dimensions were synthesized to identify commonalities of responses involving school operational factors to produce an evaluation of utilization model (EUM).

ACKNOWLEDGEMENTS

The author is indebted to many people whose encouragement, constructive criticism, and other assistance contributed to the completion of this thesis.

Particular appreciation is extended to Dr. C. H. Preitz, whose advice and guidance, as thesis supervisor, was an invaluable asset throughout the study.

The author wishes to thank Dr. H. R. Ziel, Dr. E. W. Ratsoy, and Dr. J. D. Harder whose advice as members of the thesis review committee was appreciated. Recognition is gratefully given to Dr. V. R. Nyberg, Department of Educational Psychology, Faculty of Education, The University of Alberta, whose expertise in validating the research instrument further benefited the study. The valuable contributions of other members of the validating panel, Mr. F. Williamson and Mr. G. A. Sutherland, Department of Advanced Education, Province of Alberta, are acknowledged with gratitude.

A special word of appreciation is extended to the author's wife, Lena and his family without whose support, understanding, patience, and assistance this thesis could not have been completed.

To all these individuals the writer offers sincere gratitude.

TABLE OF CONTENTS

CHAPTER PAGE

LIST OF TABLES

LIST OF FIGURES

Figure		Page

GLOSSARY OF TERMS AND ABBREVIATIONS
USED IN THIS THESIS

AERA	American Education Research Association
EPIC	Evaluation Program for Innovative Curriculum Model
CIPP	Context, Input, Process, Product Evaluation Model
PDK	Phi Delta Kappa National Study Committee on Evaluation
OECD	Organization for Economic Cooperation and Development
f	Frequency
%	Percentage
n_1	Important Responses (Tables II to XI) Significant Influence Responses (Tables XII to XXI)
n_2	Unimportant Responses (Tables II to XI) Insignificant Influence Responses (Tables XII to XXI)

CHAPTER I

ORIENTATION TO THE PROBLEM

While interest in vocational education was evident in Alberta prior to confederation, it was not until the Technical and Vocational Training Agreement of 1961 (1, 1) became law that vocational education was formally introduced into the high schools of Alberta. Due to accelerated scientific and technological development in the industries, the rapid growth of industrialization throughout the country, the increasing competition with other nations of the world for economic survival, and the emergence of the developing nations of the world which would require products from Canada's industries, sociological conditions developed which focused federal attention on the need for technical and vocational education.

Prior to the passage of the 1961 legislation, federal authorities reported that an insufficient number of skilled workers were being trained to meet the demand of industry (4, 3). These needs were being fulfilled primarily through immigration of skilled manpower from Europe. At the same time, Canadaian workers remained idle and untrained. In an attempt to alleviate the problem, federal authorities provided federal assistance which would encourage the development of those programs which are required for the training of Canada's labour force.

PROBLEM STATEMENT

Initial reports from educators concerned with vocational education indicate that the program has been relatively effective if viewed in terms of graduates entering the labour force (2, 41). Research on possible effectiveness based on facility utilization, however, is limited.

Efficiency of utilization is currently difficult to assess due to the lack of methods of measurement and the necessary instruments needed to collect relevant data. The purpose of this research was to develop a model that might be used to evaluate the utilization of facilities used for industrial-vocational education. It was not the purpose of this research to use the model to determine its effectiveness as an evaluative instrument.

OBJECTIVES OF THE STUDY

The major objective of this study was to develop a model that might be used to evaluate the utilization of facilities used for secondary school industrial-vocational education programs.

In constructing such a research model this study had as its secondary objectives the following:

1. to categorize relevant components (specific activities, procedures, and responsibilities) into compartments of evaluation (macro model);
2. to develop a micro model to include the factors which affect utilization of facilities provided for secondary school industrial-vocational education programs; and

3. to synthesize the macro and micro models into a paradigm which incorporated the components of evaluation and the factors of utilization.

Specifically this research was an attempt to answer the following questions:

1. What are the components of evaluation which might be used to evaluate utilization of facilities provided for secondary school industrial-vocational education programs?
2. What factors affect utilization of secondary school industrial-vocational education facilities?
3. How can these factors be compartmentalized into specific clusters which might influence utilization of such facilities in different ways?
4. Can the components of evaluation and factors of utilization be synthesized into a model that might be used to evaluate the utilization of secondary school industrial-vocational education facilities?

SCOPE OF STUDY

The scope of this investigation was on a provincial basis and involved all secondary industrial-vocational education schools in Alberta which offered a program of studies in building construction. This program was chosen for evaluative purposes because commonalities appear to exist in the type of facilities and equipment available for instructional purposes. Also, having instructed in a

building construction program, the researcher is familiar with student activities, student work stations, credits assigned to the courses and utilization computation.

DELIMITATIONS

To develop criteria which affect the construction of a model this study was delimited to:

1. Alberta's secondary industrial-vocational schools which scheduled a building construction program on a credit basis.
2. Alberta's secondary industrial-vocational schools that were financed jointly by provincial and federal funds under the terms of the 1961 Technical and Vocational Training Agreement.
3. Secondary school industrial-vocational education facilities where student work stations can be identified.
4. Alberta's secondary industrial-vocational schools which have a common program in building construction.

DEFINITIONS OF TERMS

The following operational definitions were used throughout this study:

An industrial-vocational school is defined as a school which offers basic programs in industrial-vocational education where students develop entry skills in a trade or a technological pursuit.

Utilization is defined as the extent to which a designated instructional area is used for the purpose it was provided based on a comparison of possible utilization and actual utilization in terms of available student work stations and enrolment data.

Facilities is defined as space and equipment provided for instructional purposes in an industrial-vocational education program.

Effectiveness is defined as the extent to which the utilization of industrial-vocational education facilities are meeting the stated objectives of that particular program.

Efficiency is defined as the ratio of actual utilization of industrial-vocational education facilities to possible utilization that might be made of those facilities.

Macro model is defined as the model of components which can be used for program evaluation.

Micro model is defined as the factors which affect utilization of facilities for industrial-vocational schools.

Student work station is defined as the total space and equipment necessary to accommodate one student for the purpose of performing all activities and experiments in the course.

Secondary school is defined as a school which offers programs at the high school level.

ASSUMPTIONS

This investigation was based on the assumption that criteria used in the evaluation of other educational programs can be modified and incorporated in designing a model which might be used to evaluate the utilization of facilities provided for secondary school industrial-vocational education programs. It was further assumed that:

1. the factors which affect space utilization can be realistically identified;
2. these factors can be categorized into distinct clusters which will identify areas of evaluation;
3. the criteria selected for evaluative purposes are representative of components which provide a realistic

evaluation of space utilization for the programs concerned; and

4. the criteria selected for determining student work station space in building construction can be applied to other industrial-vocational education programs of studies which involve secondary industrial-vocational education shop facilities.

SIGNIFICANCE OF THE STUDY

With specific reference to the problem previously outlined, industrial-vocational education facilities which remain idle represent a tremendous cost to the taxpayer without the realization of anticipated benefits that would accrue should these facilities be used. Consequently, the intended objective of training a portion of Canada's labour force with job entry skills cannot proceed at the rate projected by federal authorities.

The need for this study to provide a model for establishing criteria that can be used to evaluate utilization of industrial-vocational education facilities was expressed by Stufflebeam who stated that " . . . much research, development, and training are needed to advance the science of educational evaluation." (11,133)

PROCEDURES

Population and Sample

The population in this study included all school systems in

the Province of Alberta which offered programs in secondary school industrial-vocational education.

From this population the following two distinct samples were selected:

Sample 1 - All principals of comprehensive high schools in the Province of Alberta where a course in industrial-vocational building construction was taught.

Sample 2 - All teachers of comprehensive high schools in the Province of Alberta who taught a course in industrial-vocational building construction.

Research Design, Instrumentation and Data Collection

The method used to collect pertinent data for this study involved: (a) an intensive review of the literature to identify the components of evaluation which might be incorporated into the macro model, (b) a survey of the literature to identify the factors which are pertinent to an evaluation of the utilization of facilities, and (c) other evaluative studies which have been completed in facilities utilization.

A list of 92 factors significant to the operation of educational institutions was developed in consultation with a panel of three experts. This panel included an expert in the field of research from the Department of Educational Psychology, The University of Alberta, and two individuals from the Department of Advanced Education, Province of Alberta. One of these experts

from the Alberta Department of Advanced Education had expertise in educational program development. The other individual was considered an expert in administration and had been a building construction teacher and an administrator where building construction was taught. There was consensus among the panel members that each of the 92 factors identified were significant to the importance of evaluating utilization of facilities and had an influence on utilization of facilities.

Using a modified form of the Likert scale (8, 366) each factor was listed under the appropriate operational activity. Six columns with the scale positions denoted by the numerals 5 to 0, inclusive, were provided to the right of each item for scaling purposes. The response which was indicative of the most favourable attitude was given the highest score.

Members of both samples received the same survey instrument; however, the instrument for the teacher sample was accompanied by a different set of instructions than for the principal sample, and it included a request for information concerning each factor and background information about the instructor and school enrolment. Principals were requested to indicate the degree of importance they perceived each factor to have in evaluating the utilization of high school industrial-vocational building construction facilities, while building construction teachers were asked to mark the column which was indicative, in their perception, of the degree of influence each factor had on the utilization of facilities provided for the high school industrial-vocational building construction program.

A written request was sent to superintendents in school districts where the building construction program was offered asking their permission and cooperation to conduct this study in their schools which offered a building construction program. All superintendents indicated that they would cooperate in the study by permitting their principals and teachers to be involved. The appropriate survey instruments complete with instructions, covering letters, and self-addressed stamped return envelopes were mailed to the members of each sample. Thirteen follow-up letters were mailed seventeen days after the initial mailing. This procedure produced an additional return of one instrument.

In analyzing the data obtained, the information was tabulated by the degree of importance to the evaluation of utilization of high school building construction facilities as indicated by principals and the degree of influence each factor had on the utilization of these facilities as indicated by building construction teachers. These data were further analyzed by tabulating responses reported for scale values of 4 and 5 under an important column for the principal sample and significant influence column for the teacher sample. Although scale values of 0 to 3 were tabulated, they were treated as unimportant for the purpose of this study.

Comparisons were made using percent analyses which were computed using a desk top calculator.

A reliability test of the stability of responses was considered desirable. A split half comparison was made where

both samples were identified by sequential numbering. Odd and even numbered responses were compiled and compared to determine a correlation of reliability.

The research findings, conclusions and recommendations for the study were reported.

CHAPTER REFERENCES

[1] Canada, Department of Labour, Technical and Vocational Training Agreement. Ottawa, 1961.

[2] Cunningham, R. H., Vocational Education Follow-up. Department of Education, Province of Alberta, 1967.

[3] Doll, R. C., Curriculum Improvement: Decision-Making and Process. Boston: Allyn and Bacon Inc., 1965.

[4] Ford, C. R., "Technical and Vocational Education." A paper presented at the Banff School of Fine Arts, Banff, Alberta, 1962.

[5] Prueter, K. F., "Bridging the Gap Between Research and the Classroom," School Progress, Vol. 39, No. 10, October, 1970.

[6] Rhodes, Eric, et al., "Recommended Facilities and Space Requirements." An addendum to the Report Recommended Occupational Curriculum Offerings, Arlington, Va.: Educational Service Bureau Inc., 1965.

[7] Robertson, Alan G., "Applying Systems Analysis Techniques to the Evaluation of Vocational Programs," Journal of Industrial Teacher Education, Vol. 6, No. 3, Spring, 1969.

[8] Selltiz, C., et al., Research Methods in Social Relations. Henry Holt and Company Inc., 1960.

[9] Stake, R. E., "Towards a Technology for the Evaluation of Educational Programs." In Tyler, R. W. et al., Perspective of Curriculum Evaluation, Chicago: Rand McNally and Company, 1967.

[10] Stufflebeam, Daniel L., "Evaluation as the Basis for Decision-Making." A paper presented to the American Educational Research Association, Chicago, Illinois, February 8, 1968.

[11] Stufflebeam, Daniel L., "A Depth Study of the Evaluation Requirement." Theory into Practice, Vol. 5, No. 3, June, 1966.

[12] Swanson, L., "Program-Cost Analysis of Vocational-Technical Education in a Junior College and in a Unified School District." Leadership, Functions, Procedures and Administration of Vocational-Technical Education Agencies at the State Level, Vol. 3, March 1969.

CHAPTER II

REVIEW OF BACKGROUND RESEARCH

Library research of the professional literature dealing with the topic of evaluation revealed numerous distinct theories concerning this subject. Many of the research studies reviewed dealt primarily with the emphasis placed on the importance of evaluation in educational planning. Other research investigations reviewed placed emphasis on evaluation as it applied to measuring student achievement. Few studies were found that presented research findings on the evaluation of facility utilization. Because of the limited number of studies completed on the evaluation of facility utilization, the researcher had to rely on evaluation theories that were applicable to programs and instruction which may have implications for evaluating the utilization of facilities. Below are selected studies that were reviewed which have implications for this study.

GENERAL REVIEW OF THE RELATED LITERATURE

Evaluation--A Linkage Mechanism Between Theory and Practice (Stufflebeam)

In examining the concept of evaluation, many researchers concentrate on analyzing the concept for the purpose of designing

an evaluation system as it applies to programs and instruction. Stufflebeam's theory of evaluation is based on coordinating functions, roles, and activities into a program of planned progress. Writing on the topic of evaluation, Stufflebeam stated the following:

> Evaluation is a science of relating antecedent conditions and processes to outcomes, and outcomes to objectives. Evaluation strives (1) to determine the extent to which objectives are achieved--to measure and define outcomes, and (2) to uncover functional relationships between outcomes and process variables to explain outcomes. The criteria for assessing the effectiveness of evaluation are reliability (are the measurements reproducible?) and validity (are they homomorphic to the criteria and process variables of interest?). (20, 127)

In an effort to define criteria for evaluating a total educational program for the purpose of promoting planned educational change, Stufflebeam identifies the functions of both product and process evaluation. As a method of relating outcomes to goals on the basis of specified criteria he suggests that product evaluation attempts to achieve the following:

> (1) Product evaluation usually compares preproject with post project performance.
> (2) The best that such evaluation can do is to indicate whether the project outcomes were higher, the same as, or lower than some standard.
> (3) Product evaluation provides the information needed for decision-making at upper administrative levels (state and Federal) but is not sufficient for assisting in the decision process at the local level.
> (4) To design effective product evaluation, the objectives and associated criteria for the Federal, state, and local levels must be known.
> (5) For evaluative data to be comparable for similar projects, product evaluation plans must be specified at both Federal and state levels. (20, 129)

Process evaluation, in Stufflebeam's view, is more related to local controls and decisions since it involves "the method of relating procedures to outcomes" (20, 129). Its function is "to identify and monitor, on a continuous, molar, noninterventionist basis, the potential sources of failure in a project" (20, 129).

Stufflebeam emphasizes that one of the primary functions of evaluation in the change process is decision making which is critical at various points in that process. According to this noted researcher, evaluation is considered as a linkage mechanism between theory and practice. The system which Stufflebeam developed for evaluation purposes in a variety of situations which require evaluation, if potential sources of project failure are to be identified, is outlined as follows:

A. Focusing the Evaluation
   1. Identify the major level(s) of decision-making to be served, e.g., local, state, or national.
   2. For each level of decision-making, project the decision situations to be served and describe each one in terms of its locus, focus, criticality, timing, and composition of alternatives.
   3. Define criteria for each decision situation by specifying variables for measurement and standards for use in the judgment of alternatives.
   4. Define policies within which the evaluation must operate.

B. Collection of Information
   1. Specify the sources of the information to be collected.
   2. Specify the instruments and methods for collecting the needed information.
   3. Specify the sampling procedure to be employed.
   4. Specify the conditions and schedule for information collection.

C. Organization of Information
   1. Provide a format for the information which is to be collected.
   2. Designate a means for coding, organizing, storing, and retrieving information.

D. Analysis of Information
   1. Select the analytical procedures to be employed.
   2. Designate a means for performing the analysis.

E. Reporting of Information
   1. Define the audiences for the evaluation reports.
   2. Specify means for providing information to the audiences.
   3. Specify the format for evaluation reports and/or reporting sessions.
   4. Schedule the reporting of information.

F. Administration of Evaluation
   1. Summarize the evaluation schedule.
   2. Define staff and resource requirements and plans for meeting these requirements.
   3. Specify means for meeting policy requirements for conduct of the evaluation.
   4. Evaluate the potential of the evaluation design for providing information which is valid, reliable, credible, timely, and pervasive.
   5. Specify and schedule means for periodic updating of the evaluation design.
   6. Provide a budget for the total evaluation program.(22,42)

Evaluation--An Appraisal of Educational Processes (Neal)

Neal recognizes that there are many purposes for evaluation. He is primarily concerned with making an appraisal of the teaching and learning processes as they apply to education. Within this frame of reference and on the premise that "objectives are the key to the whole educational program" and "evaluation proceeds from this base," Neal supports Stufflebeam's view of evaluation. Writing on evaluation as a process Neal suggests that such a process involves:

a) the establishing of criteria related to the objectives of the particular educational activity;
b) the collecting of data concerning the situation with respect to those criteria; and
c) the interpreting of the data and then the making of judgments on the evidence available concerning performance in relation to objectives and the lines of future action. (11, 29)

In comparison to Stufflebeam, Neal is more specific in his assessment of process and product evaluation. Since Neal is concerned particularly with the instructional program he suggests that the process is dictated by objectives which meet predetermined standards of specificity and behavioral characteristics, and contains the following components:

a) course of study (i.e. curriculum planned);
b) various aspects of organization of curriculum within the school; and
c) units of instruction, i.e. specific teaching units around more limited parts of the curriculum with their own objectives; selected learning experiences; teaching methods; instructional materials; and built-in testing devices. (11, 31)

The product in Neal's view "represents the outcomes of the instructional programme in terms of the changes in behavior (or learning) actually resulting" (11, 31). In effect, Neal emphasizes that product criteria which can be based on suitably developed objectives should enable educators to start the evaluation process with the probability of making valid decisions provided that data collection techniques (tests, observation, etc.) are properly developed.

Hastings' Behavioral Definition of Evaluation

Hastings objects to excessive emphasis being placed on

determining the extent to which a program meets the objectives through testing criteria. He insists that evaluation is an examination of differences among methods of instruction to obtain a measure of attainment of behaviorally defined objectives. Elaborating further on this issue, Hastings presents his position that tests provide the educator with data to evaluate instructional methods. On this point he noted the following:

> (1) Instructional method comparison
> - requires definable objectives (behavioral objectives).
> - requires reliable tests of the behavioral objectives, the results of which are suitable for comparison.
>
> (2) Results of evaluation are
> - the determination of the level of concept formation.
> - the determination of the reasons behind group differences. (6, 1965)

Robertson's Evaluation by Systems Analysis

Robertson approaches the problem of evaluation from a different perspective. Although he agrees that objectives are an important aspect of evaluation he takes issue with authorities who insist that objectives must be written in individual human behavioral terms. His criticism is based on the following:

> All behavior in the evaluative usage isn't always individual--it is more often in terms of small groups and sometimes in mass populations. Very often this behavior does not include any physiomotor or cognitive learning changes in subject matter achievement. For example, in a broad sense, a change in attitude of a shop teacher toward the vocational readiness or aptitude of a group of inner city black students is behavioral--it can be thought of as "inward behavioral" instead of "outward behavioral." Or suppose we have an industrial evaluation project in which we are trying to determine if controlled variations in frequency and angle of incidence of the illumination of the work stations where metal burnishing operations are carried out will reduce

> the number of rejections of the pieces and perhaps improve texture uniformity. Now, if we think in the most common meaning of "behavioral" we are tempted to focus on workers and work methods as the variable to be manipulated or the object of what our measurement should be. In this illustration it would not be since, theoretically, work methods or processes are not changing. However, the nature, or if you please, "behavior", of a given quantity of similar metal products is the object of measurement, and, in fact, a given characteristic of a similar quantity, namely the number of rejected pieces for a given reason, is our baseline criterion measure against which we decide if "behavioral" changes are taking place. (18, 30)

Robertson is concerned with writing objectives in terms of any kind of change rather than a narrow behavioral approach. With particular reference to vocational education he suggests that systems analysis techniques can assist the evaluator to determine if objectives are being met because they enable him to pick out the time sequence stage of the program operation he is evaluating and makes it possible for him to identify the relevant elements in the program that are to be measured. In cases where it is necessary to measure the total vocational program, systems analysis techniques are an aid in classifying the elements to establish their interrelationships and make judgments about their relative effect on the nature of the end products. Robertson uses Stufflebeam's analysis for evaluation to reflect pertinent criteria as related to vocational education programs.

> CONTEXT EVALUATION - A look at the ecology or environment in which each program was started and is currently operating. Two similar programs operating for a period of time under different conditions may have different program results and in fact appear to be different.

INPUT EVALUATION - Examination of student characteristics, public relations techniques, admission and course selection policies, teacher recruitment and characteristics, etc., to determine effect upon program success variations.

PROCESS EVALUATION - To identify critical elements in the on-going program over a period of time such as administrative policies, in-service training, teacher supervision, allocation of discretionary funds for instruction, use of advisory committees, pupil grouping, etc., which may have had a major influence on program outcomes.

PRODUCT EVALUATION - Identification of program success criterion measures such as student proficiencies, program holding power, rapidity and nature of initial placement, student performance ratings of employers, etc., and their relation to Context, Input, and Process variables. (18, 31)

Kaufman's Cost-Benefit Evaluation

Kaufman's interest in evaluation goes beyond testing to discriminate among individual students for administrative or instructional purposes. Although he supports the view that measurement is a necessary part of evaluation he stresses that:

> Before measurement commences, evaluation requires the formulation of a basic educational philosophy (and its attendant goals) and the statement of specific behavioral objectives to be measured. After measurement is completed, evaluation requires (1) the analysis of measured quantities in terms of the attainment of objectives and progress toward goals, (2) an estimate of the value of existing programs in determining this progress and (3) an estimate of the costs involved in the conducting of these programs. (7, 10)

Basically Kaufman agrees with Stufflebeam's concept of evaluation. He points out, however, that evaluation must encompass more than determining the extent to which objectives are met. Evaluation in Kaufman's view must also involve an assessment of the efficiency with which the objectives are met and the benefits which are derived. Then only is it possible to make realistic

decisions to initiate, continue, modify, or discontinue plans and practices. The most appropriate method for making such evaluations according to Kaufman is a cost-benefit analysis. Kaufman defends this method on the basis that it forces an administrator (1) to think through his objectives, (2) to concentrate on costs as well as objectives, and (3) to think in terms of alternative ways of achieving the source objective (7, 4).

Fortune's Process Approach to Evaluation

Fortune, reviewing evaluation for the Massachusetts Information Feedback System, emphasizes the following:

1. There is a need for evaluation to become more descriptive of what is going on in the schools. This information as to what is must be fed back into the system to produce further change (which in turn requires further evaluation). We can no longer view evaluation as completed when the final report is written.

2. Tests and measurements no longer describe evaluation. There is need to train those with evaluation responsibility in new procedures of evaluation to improve the quality and usefulness of evaluation.

3. Evaluation is a tool in decision-making. It describes what is going on. The decisions as to what steps to take after the evaluation are often humanistic, existential decisions but, evaluation makes it possible to define the effectiveness of these decisions.

4. The broad movement of new thinking in educational research appears to be moving toward a process view of evaluation in which evaluation never ends, but is on-going. This process view is meaningful to the conduct of classrooms, special projects, and the curriculum in general, and may provide an effective link for the first time between educational researchers and school personnel.

5. The procedures and techniques of evaluation will vary as the scope and size of the evaluation changes. The larger the system the more a "process" approach to evaluation may be required. (4, 11)

The position taken by Fortune supports Stufflebeam's theory that evaluation must become a more active part of the process of change and an important activity in decision-making. It also supports Stufflebeam's view that feedback for curriculum revision must come from evaluation and that curriculum choices must be based on data generated for evaluation.

Fortune states further that through evaluation educational programs can be described adequately for replication, diagnosed for strengths and weaknesses, validated for effectiveness, modified and redesigned for efficiency, and judged for relevance and pertinence. (4, 11)

This view is consistent with the current thinking that evaluation is the basis for directed change in education. In support of this theory, Pace outlines some of the components of evaluation.

1. PRODUCT TESTING: the testing of products to describe their characteristics.

2. INSTITUTIONAL ACCOUNTING: the accumulation of data about an institution's operation--income, expenditures, costs per credit hour, faculty-student ratios, etc.

3. ACHIEVEMENT TESTING: the measurement of pupils' knowledge at the beginning and end of a course.

4. DIAGNOSIS AND ASSIGNMENT: the diagnosis of pupil's present knowledge and skills and the assignment of pupils to individualized instructional treatments.

5. SENSITIVITY TO GROUP PROCESS OR OPENESS TO CHANGE AND ADAPTATION: the procedures one used to facilitate change or innovation and the willingness to modify plans as they are carried out.

6. STUDY OF PERSONALITY DEVELOPMENT: the ways in which pupil's interests, attitudes, values, etc., change over time.

7. STUDY OF INSTRUCTION: the particular interactions between teachers and pupils, and the discovery that certain approaches work with some students and other approaches work with other students.

8. ACCREDITATION: the collection of data and its review by an accrediting agency.

9. DECISION-MAKING: the collection and use of information by administrators for decision-making. (13, 12)

The evaluation components described above produce the type of information which is required for the evaluation process. Inherent in this process according to Fortune are four types of decisions.

1. Decisions concerning the design of program evaluation--kinds of information required by the program decision-makers (decision oriented, conclusion oriented).

2. Decisions related to the nature of the variables being measured--internal in the subject, in the affective domain, inferred, instable.

3. Decisions involving the size, scope, and intensity of the evaluation.

4. Decisions related to the audience--different personnel seek different kinds of information from an evaluation. (4, 13)

This essentially reflects the view held by both Pace and Stufflebeam.

Scriven's Intrinsic-Pay-Off Evaluation

Scriven suggests that evaluation should not only judge the attainment of goals, but should judge the suitability of stated goals for a particular situation. He supports this view on the basis that there are two different approaches to evaluation. The first approach is called "intrinsic evaluation" which involves the appraisal of the teaching instrument (content, grading

procedures, goals, teacher attitudes, etc.) and the second approach is called "pay-off evaluation". Scriven subscribes to the view that the nature of student errors are important in evaluating reasons for difficulties as shown by test results. To clarify his position, Scriven states that "evaluation proper must include as an equal partner with the measuring of performance against goals, procedures for the evaluation of the goals" (19, 52). He suggests further:

> If we have really satisfied ourselves that we are using good tests of the main criterion variable, then to discover parity of performance is to have discovered something extremely informative. "No difference" is not "no knowledge". (19, 67)

Evaluation and Educational Practices

The main objective of evaluation according to Stake is to reveal those relationships which help in the formation of generalizations involving educational practices. Description and judgment are essential for the process of evaluation and involve antecedent data, transaction data, and outcome data. Campbell and Gregg view evaluation as:

> . . . a means for determining how well the organization, the program, or the activity is achieving the purposes for which it was designed. (1, 312)

Common to many other scholars who have written about evaluation, Campbell and Gregg support the view that "the evaluating process should be related directly to the purposes or ends toward which the activity or program being evaluated is

aimed" (1, 312). They suggest, however, that the evaluating process can logically be effected in four steps.

> The first step in the evaluating process is the selection and definition of the particular phase of the total activity which is to be evaluated. A second step is the development and acceptance of criteria or basic assumption on which interpretations and judgments will be based. The collection of data pertinently related to the criteria is the third step in evaluation. The final step is the analysis and interpretation of the data and the drawing of conclusions. (1, 312)

Essentially, the general purpose of evaluation appears to be that of improving the effectiveness of attaining objectives.

The Phi Delta Kappa National Study Committee on Evaluation defines educational evaluation as "the process of delineating, obtaining and providing useful information for judging decision alternatives" (14, 40). The process according to this committee seems to involve more than what is known arbitrarily as evaluation. It outlines the tasks of evaluation to be that of: (1) providing continuous readings along the congruence (the degree of discrepancy between objectives and performance) and contingency (the assessment of new directions in the society or the culture dimensions), (2) identifying options, (3) explicating values and criteria, and (4) providing information that weights the options in relationship to the criteria. (14, 40)

The key to the evaluation process in the view of the committee is found in the following terms:

> PROCESS - a particular and continuing activity subsuming many methods and involving a number of steps or operations.

DECISION ALTERNATIVE - two or more different actions that might be taken in response to some situation requiring altered action.

INFORMATION - descriptive or interpretive data about entities (tangible or intangible) and their relationships, in terms of some purpose.

DELINEATING - identifying evaluative information required through an inventory of the decision alternatives to be weighed and the criteria to be applied in weighing them.

OBTAINING - making information available through such processes as collecting, organizing and analyzing and through such formal means as measurement data processing, and statistical analysis.

PROVIDING - fitting information together into systems of subsystems that best serve the purposes of the evaluation and reporting the information to the decision maker.

USEFUL - satisfying the scientific, practical, and prudential criteria pertaining to the judgmental criteria to be employed in choosing among the decision alternatives.

JUDGING - the act of choosing among the several decision alternatives, the act of decision-making. (14, 40)

Most of the empirical studies currently available attempt to express utilization either quantitatively, subjectively, or presumptuously. They were invaluable to the researcher for purposes of identifying factors which were used to develop the micro model.

Swanson, for instance, has done some exploratory work with program cost analysis of vocational-technical education in junior colleges and in unified school districts for the United States Department of Health, Education, and Welfare by using weekly student contact hours (W.S.C.H.) per semester as the unit

for determining program costs. In conducting his research Swanson found that related variables needed to be controlled when comparisons of programs were made.

Rhodes presents a plan for utilization of facilities based on subjective assumptions:

> The number of classrooms or laboratories required was determined by reviewing each curriculum offering and selecting the course offering and course hours in each quarter for any given facility. This item was then multiplied by the number of sections required. A total was then developed for each quarter and the total divided by the number of hours available for use of the facility. This is the number of classrooms required. (17, 8)

The National Study Committee on Secondary School Evaluation suggests that:

> The two pivotal points of this evaluation are (1) the school's philosophy, objectives, and functions, and, (2) characteristics of the school and community. (10, 258)

Although these factors are given special evaluative consideration, the committee goes on to say:

> When evaluations are made, factors such as size, type, location of school, financial support available, and state requirements should not be permitted to justify failure to provide a program and facilities appropriate to the philosophy, objectives, and functions and to the needs of the school and community. (10, 258)

In writing on school building resources and their effective use, Oddie examines the problems of intensive use. In his view "the effective use of school building resources demands that schools be used as intensively as possible" (12, 19). For intensive utilization it is essential that the number of students a school can accommodate by design should not exceed its recruitment potential. With this in mind Oddie attempts to answer questions

such as (a) should all students be accommodated at the same time or would some kind of shift-working lead to more intensive use? (b) what should be done with classrooms and laboratories which are unused for part of the work day in schools which offer specialized programs?

Oddie concludes that intensive use of school accommodation demands that:

> 1. recruitment potential be accurately estimated;
> 2. decisions be made as to shift working, and on length and periodicity of terms (Note: 1 and 2 are intimately linked since, if some students can be accommodated only in certain shifts, attendance may be determined, at least in those cases where it is voluntary. As a corollary the extent to which shifts may be worked or will need to overlap depends on how long pupils in the recruitment area take to get from home to school);
> 3. a decision be made on the curriculum (i.e., the subjects to be taught and the hours per week devoted to them);
> 4. a decision be made on which subjects are to be taught in double periods and which are to be taught in half or double classes;
> 5. in many cases means must be found of teaching more than one specialized subject in the same teaching space. Consideration is needed in every case as to which units of educational administration are best qualified to make these decisions and which decisions are best made centrally on the one hand, or locally on the other. (12, 32)

MacConnell takes a pragmatic view to the matter of utilization. He suggests that an evaluation of proposed facilities be made on the basis of educational specifications.

> Educational specifications are tentative, and relative to particular situations. Paragons of planning and absolute standards cannot be developed for schools because of many complex variables; the needs and interests of the community, the administrator's competency in group dynamics and human relations, the competency of teachers with techniques and processes, the specific class sizes, the available amounts and types of tools, materials, furniture, and equipment, the geographical location, and the community finances. (8, 145)

It was not the intention of this review to exhaust the topic of evaluation. The objective was to search for commonalities in concept and procedures of evaluation to determine if a trend could be detected whereby specific components of evaluation could be defined and categorized. There appeared to be sufficient evidence that such a trend exists and is used as a basis for development of the macro model which will be discussed in Chapter V.

<u>Summary</u>

Scholars of evaluation consistently emphasize the importance of four areas of evaluation:

1) Context evaluation
2) Input evaluation
3) Process evaluation
4) Product evaluation

Many of these scholars present models intended to aid the evaluator in making specific judgments. Generally, there are differences among models which are primarily related to procedures of recording information and areas of emphasis.

The process of evaluation is commonly viewed as a continuous one involving all personnel at all stages of activity. The related literature appears to indicate the importance of evaluation to attain a desirable standard of effectiveness and efficiency. While some studies which evaluate facilities are available, no research which isolates the criteria for evaluating utilization of facilities could be located. It would seem,

therefore, that this study examines an area which has not previously been explored.

COMPONENTS OF EVALUATION

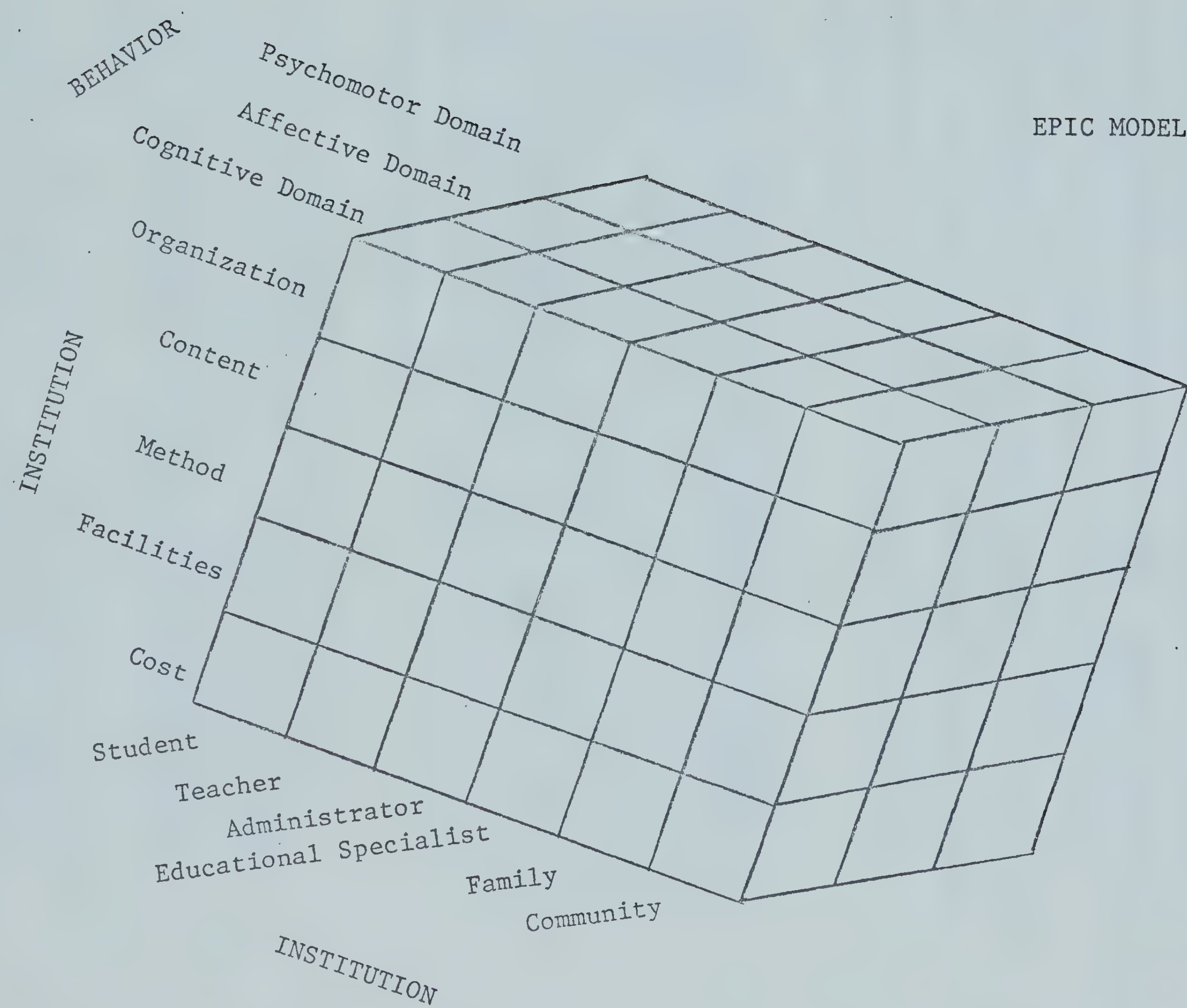
Many of the theoretical positions taken by authorities in the field of evaluation discussed in the previous section have been developed into models which describe strategies, structures, and methods of evaluation. Among models which have received special attention are the Evaluation Program for Innovative Curriculum (EPIC) Model, the Clark-Guba Model for Educational Change, the Pittsburgh Discrepancy Evaluation Model and the Context, Input, Process, Product (CIPP) Evaluation Model. While these are representative they are not an exhaustive list of models which have been submitted by outstanding authorities on the topic of evaluation.

The EPIC Evaluation Model (Figure 1)

The procedures, structure, and model of EPIC evaluation are described in Hammond's paper on Evaluation at the Local Level (5, 1967) where a systematic way to assess the effectiveness of an innovation is proposed. To provide the required information to guide the evaluation in evaluating instructional programs, Hammond has developed a framework which offers a wide variety of potentially relevant variables. The three sets of variables unique to the structure of this model are instruction, institution,

Figure 1

EPIC MODEL



and behavior. In the set of variables which Hammond identifies as instruction, he includes content, methodology, organization, facilities, and cost. The set of variables which are included in the classification of institution contain factors related to the student, teacher, administrator, educational specialist, family, and community. The behavioral variables are those matters related to the psychomotor domain, the affective domain, and the cognitive domain. Hammond's conceptions of this system are summarized as follows:

> The success or failure of innovations in modern programs of instruction is determined by the interaction of specific forces within the educational environment. The forces affecting innovation are described in terms of specific dimensions and variables operating in a three-dimensional structure. The interaction of variables from each of the three dimensions produces combinations of variables described as factors to be considered in the evaluation of a given program. The importance of any combination of variables is determined by the nature of the instructional program selected for study.
>
> INSTRUCTIONAL DIMENSION
>
> The Instructional Dimension is that dimension of the model which describes the innovation in terms of specific variables. The first of these variables is that of Organization. Organization is defined as the matrix in which teachers and pupils are brought together so that instruction can take place. The organizational matrix may be divided into two components known as time and space.
>
> The second variable is that of Content. Content is defined as that structure or body of knowledge which is identified with the subject matter of a discipline and controls its inquiries. Content may be described in terms of specific topics to be covered at a given grade level.
>
> A third variable is that of Methodology. Methodology is that process designed to facilitate learning. It may be divided into three levels: teaching activites, types of interaction, and learning principles or theories utilized.

The fourth and fifth variables are Facilities and Cost. Facilities is defined as that space, special equipment, and expendables needed to support an educational program. Cost is the money required for facilities, maintenance, and personnel to accomplish a given task.

The variables defined in the above represent important categories to be considered in the instructional program. The innovation to be considered may be contained in any one of the variables (e.g., team teaching--organization). Yet all variables must be considered in the analysis of the total program. If innovations are to be adopted on a wide scale, a complete picture of the program must be studied with its various components carefully analyzed.

INSTITUTIONAL DIMENSION

The Institutional Dimension is that dimension of the model defined by the variables of Child, Teacher, Administator, Educational Specialist, Family, and Community. Any given innovation will be influenced by the unique qualities of the individuals involved. For the purposes of evaluation, each of the variables is described in terms of sub-variables that may have a direct influence on the given program.

Assessment programs of the past have focused primarily on the child and his response to content in a given subject area. With the changes taking place in instructional programs, more evidence is needed as to the influence of the teacher, administrator, parent, and community on a given innovation.

BEHAVIORAL DIMENSION

The Behavioral Dimension is defined by the variables of Cognitive, Affective, and Psychomotor Behavior. Evaluation as a process is best approached through objectives stated in behavioral terms. At this point in the development of the structure for evaluation, three variables for classifying these objectives are recognized. The first of these variables is Cognitive Behavior. Cognitive Behavior includes the recall, comprehension, and application of knowledge and the utilization of intellectual skills of analysis, synthesis, and evaluation. The best example of tests in this area are the standardized tests of achievement. In the majority of programs this is the only test utilized to describe the success or failure of both current and innovative programs.

The second variable in this dimension is Affective Behavior. Affective Behavior is defined as the interest, attitudes, values, appreciations, and adjustments of the individual. In recent years we have reached a point in the evaluation process where we are now concerned not only with the knowledge gained, but with the willingness of the student to identify himself with a given subject. Many instructional programs today repel students for reasons other than academic ability. Recognizing this fact, it is important that we look at the reasons for this behavior.

Psychomotor Behavior is the third variable in this domain. It includes those acts which involve neuro-muscular coordination. Handwriting and physical education utilize this variable to draw conclusions about special programs.

A fourth variable, Perceptual Behavior, is now under study at the Center. It is hoped that this area will be adequately defined so that it may be utilized in the evaluation process for the coming year. At this point, it may be classified as experimental.

The structure developed provides a framework to produce factors that have a direct influence on a given innovation. The factors created by the interaction of one variable from each of the dimensions may be studied in any depth desired by a school district. In most cases, the study of a given factor will be determined by time, availability of tests and procedures, and the needs of a given school district. (5, 2)

The Clark-Guba Evaluation Model

The Clark-Guba Model (1, 111) for educational change depicts the role of evaluation in the change process. Although some scholars contend that evaluation should be a discrete stage in this process, Clark and Guba maintain that it needs to be conducted at each stage of the process. The designers of this model contend that the important elements inherent in the change process include research, development, diffusion, and adoption. A detailed analysis involving the classification of processes

related to and necessary for change in education and a rationale for this schema as developed by Clark and Guba is presented below and illustrated in Figure 2.

> The first proposition underlying the schema is that all social process fields must utilize a wide range of processes or functions which take place as the field attempts to develop and subsequently integrate new knowledge into more effective practice. Through logical analysis and synthesis of empirical descriptions of the innovation process in other fields, we have arrived at a simple four-phase division of these processes: (a) research, (b) development, (c) diffusion, and (d) adoption. These categories are, in turn, subdivided into more discrete elements representing stages in several process phases.
>
> The second proposition of the figure is that objectives or goals can be stated discretely for each phase and stage and, consequently, that appropriate criteria can be established in terms of which each phase can be evaluated or assessed. This last point has caused confusion in every presentation of the schema.
>
> The third proposition of the figure is that the change process is quasi-sequential from research to adoption. The seemingly sequential flow, however, can easily be overemphasized. To be sure, research may lead to the formulation of solutions to operating problems. However, the existence of operating problems may stimulate research, research findings may emerge from invention efforts and inventions may occur which have shaky or nonexistent research foundations. Research is a necessary element in the continued development of the change process in education, but there is no linear relationship between discrete research projects and individual inventions. There are always those who contend that since inventions must be evaluated, one discrete stage in the process should be labeled evaluation. Evaluation is obviously appropriate, but it needs to be conducted discretely at each stage of the process. For example, failure to disseminate information about a designed invention can occur, but while this failure can disrupt the process of innovation, it has nothing to say to us about the invention itself, the design of the invention, or the research, if any, undergirding the invention. (1, 115)

A CLASSIFICATION SCHEMA OF PROCESSES RELATED TO AND NECESSARY FOR CHANGE IN EDUCATION[1]

	RESEARCH	DEVELOPMENT		DIFFUSION		ADOPTION		
		INVENTION	DESIGN	DISSEMINATION	DEMONSTRATION	TRIAL	INSTALLATION	INSTITUTIONA-LIZATION
OBJECTIVE	To advance knowledge	To formulate a new solution to an operating problem or to a class of operating problems, i.e., TO INNOVATE	To order and to systematize the components of the invented solution; to construct an innovation package for institutional use, i.e., TO ENGINEER	To create widespread awareness of the invention among practitioners, i.e., TO INFORM	To afford an opportunity to examine and assess operating qualities of the invention, i.e., TO BUILD CONVICTION	To build familiarity with the invention and provide a basis for assessing the quality, value, fit, and utility of the invention in a particular institution, i.e., TO TEST	To fit the characteristics of the invention to the character-istics of the adopting institution, i.e., TO OPERATIONALIZE	To assimilate the invention as an integral and accepted component of the system, i.e., TO ESTABLISH
CRITERIA	Validity (internal and external)	Face validity (appropriateness) — Estimated viability — Impact (relative contribution)	Institutional feasibility — Generalizability — Performance	Intelligibility — Fidelity — Pervasiveness — Impact (extent to which it affects key targets)	Credibility — Convenience — Evidential assessment	Adaptability — Feasibility — Action	Effectiveness — Efficiency	Continuity — Valuation — Support
RELATION TO CHANGE	Provides basis for invention	Produces the invention	Engineers and packages the invention	Informs about the invention	Builds conviction about the invention	Tries out the invention in the context of a particular situation	Operationalizes the invention for use in a specific institution	Establishes the invention as a part of an ongoing program; converts it to a "non-innovation"

Figure 2

[1]Taken from Clark-Guba (1,116)

The Discrepancy Evaluation Model

Provus (16, 184) endorses the Discrepancy Evaluation Model which explicates an evaluation design that may be used for program improvement as well as program assessment. The Discrepancy Evaluation Model developed out of the need for an instrument to improve educational programs as well as to assess them. After a considerable expenditure of time and money the American Education Research Association (AERA) presented a framework which would define program standards, determine if a discrepancy exists between the aspects of the performance of the program, and provide the means of using discrepancy information to either change performance or to change program standards. The design as presented by AERA is summarized by Provus as follows:

> Under the Discrepancy Evaluation Model, the evaluation of a program already staffed and under way contains four major developmental stages and three major content categories.
>
> DISCREPANCY EVALUATION MODEL
>
> | Stages | Content |
> |---|---|
> | | Input Process Output |
> | 1. Design | Design Adequacy |
> | 2. Installation | Installation Fidelity |
> | 3. Process | Process Adjustment |
> | 4. Product | Product Assessment |
> | 5. Program Comparison | Cost-Benefit Analysis |
>
> (16, 184)
>
> FIGURE 3
>
> Stages 1 through 4 evaluate single programs. As shown in Figure 3, however, there is a fifth, optional stage to facilitate the comparison of two or more programs. The essential work of program evaluation at each stage is shown in the boxes cutting across content categories. The process of evaluation consists of moving through stages

> and content categories in such a way as to facilitate a comparison between program performance and standards while at the same time identifying standards to be used for future comparisons.
>
> At each stage of the model, performance information is obtained and compared with a standard that serves as the criterion for judging the adequacy of that performance.
>
> At Stage 1, a description of the program's design is obtained as "performance" information. This performance is compared with the design criteria postulated as a standard. Discrepancy between performance and standard is reported to those responsible for the management of the program. At Stage 2 the standard for judging performance is the program design arrived at in Stage 1. Program performance information consists of field observations of the program's installation. Discrepancy information may be used by the program manager to redefine the program or change installation procedures. At Stage 3 performance information is collected on a program's interim products. Discrepancy information is used either to redefine process and relationship of process to interim product or to improve control of the process being used in the field. At Stage 4 the standard is the part of the program design that refers to terminal objectives. Program performance information consists of criterion measures used to estimate the terminal effects of the project. At this point in time, if decision-makers have more than one project with similar outcomes available to them for analysis, they may elect to do a cost-benefit analysis to determine program efficiency. (16, 184)

The Context, Input, Process, Product Evaluation Model (CIPP Model)

The development of the CIPP Model was initiated by Stufflebeam in response to problems in defining educational evaluation, in designing evaluation, and in conceptualizing bases for such evaluations. The basic problem in Stufflebeam's view is the lack of theory which pertains to the nature of evaluation required to accommodate educational programs. To resolve this problem, Stufflebeam suggests that we must conceptualize the nature of the educational programs which need evaluation. We need to

conceptualize in general as well as in relationships to specific educational programs. Above all, we need to conceptualize a structure of evaluation design required to conduct educational evaluation. To clarify the basic concept which developed into the CIPP Model, Stufflebeam advanced the following definition of evaluation:

> Generally, evaluation means the provision of information through formal means, such as criteria, measurement, and statistics to supply rational bases for making judgments which are inherent in decision situations. To clarify this definition, it will be useful to define several key terms. A decision is a choice among alternatives. A decision situation is a set of alternatives. Judgment is the assignment of values to alternatives. A criterion is a rule by which values are assigned to alternatives, and optimally such a rule includes the specification of variables for measurement and standards for use in judging that which is measured. Statistics is the science of analyzing and interpreting sets of measurements. And, measurement is the assignment of numerals to entities according to rules, and such rules usually include the specification of sample elements, measuring devices and conditions for administering and scoring the measuring devices. Stated simply, evaluation is the science of providing information for decision-making. (22, 19)

Stufflebeam is consistent in his conception of the importance of evaluation for decision-making purposes. While Stufflebeam admits that there are many different kinds of educational decision situations, he concludes "that functions of decision situations in education may be classified as planning, programming, implementing, and recycling" (22, 30). If these are the educational decisions which must be served, Stufflebeam suggests that strategically these can best be served by four types of evaluation--context, input, process, and product, which possess the following functions:

Context evaluation would be used when a project is first being planned. _Input_ evaluation would be used immediately after context for specific programming of activities. _Process_ evaluation would be used continuously during the implementation of the project. _Product_ evaluation would most likely be used after a complete cycle of the project. (22, 30)

Stufflebeam describes the significance of each type as it relates to the evaluation of educational programs in the following extended quote:

> The major objective of context evaluation is to define the environment where change is to occur, the environment's unmet needs, and the problems underlying those needs. The method of context evaluation begins with a conceptual analysis to identify and define the limits of the domain to be served as well as its major subparts. Next, empirical analyses are performed, using techniques such as sample survey, demography, and standardized testing. The purpose of this part of context evaluation is to identify the discrepancies among intended and actual situations for each of the subparts of the domain of interest and thereby to identify needs. Finally, context evaluation involves both empirical and conceptual analyses, as well as appeal to theory and authoritative opinion, to aid judgments regarding the basic problems underlying each need.
>
> Decisions served by context evaluation include deciding upon the setting to be served, the goals associated with meeting needs, and the objectives associated with solving problems.
>
> To determine how to utilize resources to meet program goals and objectives, it is necessary to do an input evaluation. Its objective is to identify and assess relevant capabilities of the proposing agency, strategies which may be appropriate for meeting program goals and designs which may be appropriate for achieving objectives associated with each program goal. The end product of input evaluation is an analysis of alternative procedural designs in terms of potential costs and benefits. Specifically, alternative designs are assessed in terms of their resource, time, and budget requirements; their potential procedural barriers; the possibilities and costs of overcoming them; relevance of the designs to program objectives; and overall potential of the design to meet program goals. Essentially, input evaluation provides information for deciding whether outside assistance should be sought for meeting goals

and objectives, what strategy should be employed, e.g., the adoption of available solutions or the development of new ones, and what design or procedural plan should be employed for implementing the selected strategy.

Methods for input evaluation are lacking in education. The prevalent practices include committee deliberations, appeal to the professional literature, and the employment of consultants. In a few areas, formal instruments exist to aid decision-makers in making input decisions.

Decisions based upon input evaluation usually result in the specification of procedures, materials, facilities, schedule, staff requirements, and budgets in proposals to funding agencies. From the information provided in the proposals, the funding agencies in turn do an input evaluation to determine whether or not to fund the proposed projects. Funding agencies commonly employ expert consultants to serve as judges in their input evaluation.

Once a designed course of action has been approved and implementation of the design has begun, process evaluation is needed to provide periodic feedback to project managers and others responsible for continuous control and refinement of plans and procedures. The objective of process evaluation is to detect or predict, during the implementation stages, defects in the procedural design or its implementation. The overall strategy is to identify and monitor, on a continuous basis, the potential sources of failure in a project. These include interpersonal relationships among staff and students; communication channels; logistics; understandings of agreement with the intent of the program by persons involved in and affected by it; adequacy of the resources, physical facilities, staff, and time schedule; etc.

Thus, under process evaluation, the evaluator accepts the program as it is and as it evolves, and monitors the total situation as best he can by focusing the most sensitive and non-intervening data collection devices and techniques that he can obtain on the most crucial aspects of the project. Such evaluation is multivariate, and not all of the important variables can be specified before a project is initiated. The process evaluator focuses his attention on theoretically important variates, but he also remains alert to any unanticipated but significant events. Under process evaluation, information is collected daily, organized systematically, analyzed periodically, e.g., weekly, and reported as often as project personnel require such information, e.g., monthly.

Thus, project decision-makers are not only provided with information needed for anticipating and overcoming procedural difficulties, but also with a record of process information to be used later for interpreting project outcomes.

Product evaluation is used to determine the effectiveness of the project after it has run full cycle. Its objective is to relate outcomes to objectives and to context, input, and process, i.e., to measure and interpret outcomes.

The method is to operationally define and measure criteria associated with the objectives of the activity, to compare these measurements with predetermined absolute or relative standards, and to make rational interpretations of the outcomes using the recorded context, input, and process information. Criteria for product evaluation may be either instrumental or consequential, a distinction pointed out earlier by Scriven.

In the change process, product evaluation provides information for deciding to continue, terminate, modify or refocus a change activity, and for linking the activity to other phases of the change process. (22, 30)

The CIPP Evaluation Model which Stufflebeam advances classifies the strategies for evaluating educational change. For each strategy, Stufflebeam includes the objective, the method of proceeding and how each strategy is related to decision-making in the change process. The components of this model are presented in the matrix on the following page (Figure 4).

Each of the models which have been discussed in this chapter emphasizes certain specific aspects related to the evaluation process. While there is some commonality of purpose which they represent the objectives for implementing such evaluation models vary. More specifically, "the Discrepancy Evaluation Model and the EPIC Model are designed to deal primarily with

Figure 4

The CIPP Evaluation Model[2]

A Classification Scheme of Strategies for Evaluating Educational Change

The Strategies

	Context Evaluation	Input Evaluation	Process Evaluation	Product Evaluation
OBJECTIVE	To define the operation context, to identify and assess needs in the context, and to identify and delineate problems underlying the needs.	To identify and assess system capabilities, available input strategies, and designs for implementing the strategies.	To identify or predict, in process, defects in the procedural design or its implementation, and to maintain a record of procedural events and activities.	To relate outcome information to objectives and to context, input, and process information.
METHOD	By describing individually and in relevant perspectives the major subsystems of the context; by comparing actual and intended inputs and outputs of the subsystems; and by analyzing possible causes of discrepancies between actualities and intentions.	By describing and analyzing available human and material resources, solution strategies, and procedural designs for relevance, feasibility and economy in the course of action to be taken.	By monitoring the activity's potential procedural barriers and remaining alert to unanticipated ones.	By defining operationally and measuring criteria associated with the objectives, by comparing these measurements with predetermined standards or comparative bases, and by interpreting the outcome in terms of recorded input and process information.
RELATION TO DECISION-MAKING IN THE CHANGE PROCESS	For deciding upon the setting to be served, the goals associated with meeting needs and the objectives associated with solving problems, i.e., for planning needed changes.	For selecting sources of support, solution strategies, and procedural designs, i.e., for programing change activities.	For implementing and refining the program design and procedure, i.e., for effecting process control.	For deciding to continue, terminate, modify or refocus a change activity, and for linking the activity to other major phases of the change process, i.e., for evolving change activities.

[2]Taken from Stufflebeam (22, 31)

ad hoc evaluation. The CIPP Model is designed to encompass the total program, involving both continuing and *ad hoc* evaluation capabilities." (23, 287)

Stufflebeam identifies the basic objectives, methods, and their relation to decision-making in the change process. Details in Stufflebeam's CIPP Model, however, were not sufficient to determine the possibility of committing factors significant to the evaluation of utilization process to a specific evaluation type. In reviewing additional literature on this subject, however, the researcher found that the CIPP Model had been subjected to further scrutiny which yielded information that not only supported a differential concept for evaluating activities related to the educational process, but offered a basis for determining the eligibility of factors considered for an evaluation of utilization for each specific type of evaluation. In view of these observations the researcher placed a rather high degree of confidence in the CIPP Evaluation construct for purposes of developing the macro model.

The Phi Delta Kappa (PDK) National Study Committee on Evaluation concurs with the educational decision-making concept of evaluation. In approaching the subject of evaluation the committee reinforces Stufflebeam's basic concept by emphasizing the complexity of the decision-making process and offering a detailed plan for developing a practical method of evaluation for decision-making purposes using the CIPP Model prescribed by Stufflebeam.

The PDK Committee indicated its accord to Stufflebeam's basic theory when it wrote:

> Context evaluation serves planning decisions to determine objectives; input evaluation serves structuring decisions to determine project designs; process evaluation serves implementing decisions to control project operations; and product evaluation serves recycling decisions to judge and react to project attainments. (23, 218)

The PDK National Study Committee expanded these definitions to identify generally the characteristics of the different types of evaluation. The committee stated:

> To monitor a system and thereby provide information on needed changes, context evaluation is mainly general and systematic. The other three types of evaluation are specific and _ad hoc_; they come into play only after a planning decision has been reached to effect some sort of system change, and specific evaluation designs for each vary according to the setting for the change. Generally speaking, the greater the change and the lower the information grasp (decision-maker's knowledge of how to effect the change), the more formal, structured, and comprehensive is the evaluation required. (23, 218)

The committee examined the CIPP Evaluation Model and described the distinctive qualities which are inherent in each type of evaluation. The following quote indicates that the committee examined the CIPP model for its characteristic components. In discussing the context evaluation component of the model the committee wrote:

> Context evaluation is the most basic type. Its purpose is to provide a rationale for determination of objectives. Specifically, it defines the relevant environment, describes the desired and actual conditions pertaining to that environment, identifies unmet needs and unused opportunities, and diagnoses the problems that prevent needs from being met and opportunities from being used. Diagnosis of problems provides an essential basis for developing objectives whose achievement results in program improvement. (23, 218)

Context evaluation has many distinctive characteristics. Some of its characteristics which are relevant to system evaluation may be summarized by stating that (1) it sets the boundaries, (2) it describes and analyzes, (3) it describes values and goals, (4) it is a reflection of theoretical and empirical knowledge in a field, (5) it determines if practice is consistent with the validated principles of a relevant theory, (6) it provides a basis for control within the system, (7) it looks for emerging value orientation outside the system to change orientation related to values within the system, (8) it provides an initial operational basis for defining change objectives, (9) it identifies potential strategies of methodology, (10) it develops proposals for funding. "Context evaluation provides a basis for widespread communication, including a factual basis for public information services" (23, 218)

> The purpose of input evaluation is to provide information for determining how to utilize resources to meet program goals. This is accomplished by identifying and assessing (1) relevant capabilities of the responsible agency, (2) strategies for achieving program goals, and (3) designs for implementing a selected strategy. This information is essential for structuring specific designs to accomplish program objectives.
>
> The end product of input evaluation is an analysis of one or more procedural designs in terms of potential costs and benefits. Specifically, alternative designs are assessed concerning staffing, time, and budget requirements; potential procedural barriers, the consequences of not overcoming these barriers, and the possibilities and costs of overcoming them, relevance of the designs to program objectives; and overall potential of the design to meet the objectives. (23, 222)

Basically, input evaluation provides the information which is used to decide if assistance from outside the system is

required to meet objectives. Also, it provides information to decide how objectives should be stated operationally, what kind of strategy the evaluation should employ and what design or procedural plan is needed to implement a selected strategy. Input evaluation is instrumental in detecting resource problems which need to be solved in implementing the selected strategy. On the other hand, however, it attempts to seek a solution to basic problems within the overall system. (23, 223)

> While context evaluation is mainly systematic and macroanalytic, input evaluation is essentially ad hoc and microanalytic. Its impetus is in the objectives for change established due to needs, opportunities, and problems in the context. Its function is to determine how best to meet newly stated objectives . . . As it aids in the selection of overall strategies, it is general. As it assists in structuring a particular strategy into a design, it is specific. As it looks at the theoretical relationship between strategy and objectives, it is logical, but as it collects performance data about competing strategies under pilot conditions, it is empirical. In projecting costs and benefits, input evaluation is future oriented, but in obtaining data about the previous use of a strategy, it is past oriented.
>
> Once a designed course of action has been approved and implementation has begun, process evaluation is necessary to provide periodic feedback to persons responsible for implementing plans and procedures. Process evaluation has three main objectives--the first is to detect or predict defects in the procedural design or its implementation stages, the second is to provide information for programmed decisions, and the third is to maintain a record of the procedure as it occurs.
>
> There are three strategies to be followed in process evaluation. The first is to identify and monitor continuously the potential sources of failure in a project. These include but are not limited to: interpersonal relationships among staff and students, communication channels, logistics, understandings of and agreement with the intent of the program by persons involved in and affected by it, and adequacy of the resources, physical facilities, staff, and time schedule.

> The third process evaluation strategy is to note the main features of the project design, such as concepts to be taught and the amount of discussion to take place, and in these terms, to describe what actually takes place. This information will be especially useful later in determining why objectives were or were not achieved--that certain concepts were not learned might or might not be the fault of the design or the procedure. (23, 223)

Two important aspects concerning the relationship of process evaluation with other kinds of evaluation are that process evaluation depends for success on the adequacy with which context and input evaluations are performed and process evaluation has more significance than product evaluation in the initial stages of program development. There appears to be some interdependancy between process and product evaluation. (23, 231)

The PDK committee identified product evaluation as the fourth type of evaluation when it wrote:

> The fourth type of evaluation is product evaluation. Its purpose is to measure and interpret attainments not only at the end of a project cycle, but as often as necessary during the project term.
>
> The general method of product evaluation includes devising operational definitions of objectives, measuring criteria associated with the objectives of the activity, comparing these measurements with predetermined absolute or relative standards, and making rational interpretations of the outcomes using the recorded context, input, and process information. (23, 232)

Evaluation has been traditionally known as what is referred to as product evaluation. The three other types of evaluation, however, contain many similarities to product evaluation. To summarize, both context and product evaluations make an assessment of the extent to which ends are attained. In this regard, context evaluation provides specifications in terms of

how product evaluation is later effected. Input and product evaluations, however, can be easily distinguished. Input evaluation occurs before the change project is operationalized while product evaluation occurs during and after the project. Essentially, "context evaluation determines the specifications for product evaluation, input evaluation provides the specifications for process evaluation" (23, 232)

> Product evaluation investigates the extent to which objectives have been or are being attained; process evaluation assesses the extent to which procedures are operant as intended. Both types of evaluation provide feedback for controlling and evolving change procedures in process. Process evaluation makes it possible to determine if actual procedure is discrepant from design, and product evaluation assists in determining whether objectives are being attained.
>
> . . . Product evaluation reports that objectives were or were not achieved; process evaluation provides a basis for interpreting the reason for the outcome. If the objectives were not achieved, it would be important to know whether the intended procedure was actually implemented--process evaluation provides information for this determination. If objectives were achieved, it would be important to have a description of the actual procedure that produced the outcome. Such process information also provides a basis for replication, diffusion, and installation of a change procedure, as well as refinement of its overall design. (23, 233)

The foregoing presents a basis for examining a variety of factors which may be significant to various needs for evaluation. Specifically, it presents a mechanism for identifying factors as to the type of evaluation these factors might be subjected to. Robertson's adaptation of the CIPP Evaluation Model developed by Stufflebeam is consistent with the general concept of the PDK Committee's model, however, it is more

expansive in specifying the precise factors which might be subject to a particular type of evaluation. This classification system for Evaluating Long Term Progress and Change follows: (18, 32)

I - Context Evaluation

	THEORY	OPERATION
A--OBJECTIVE	To define the operating context or environment at different stages in time; to identify and assess needs or problems in the environment which the program product was intended to supply or alleviate.	Identification of the component parts of the geographic area for which the program was designed such as economy, population, labor markets, competitive educational opportunities, financing, community interest, and community elements leadership roles.
B--METHOD	By individually describing the major subsystems of the context in their relevant perspectives and by analyzing the intended versus the actual inputs, it is hoped that causes of discrepancies between intended and actual system inputs can be determined.	Break up the objective operations into clusters of sub-problems. Identify what would have been the ideal program solution for each, if the climate and resources were unlimited and each was not related to the other. Compare with the actual program characteristics which were adapted. Test for relevancy to the operational objectives above, examine feasibility of alternatives and estimate cause and validity of the limitations on what would have been the ideal program.

C--APPLICATION	For determining if the operating program is a direct outcome of the original program need; for validating if the original contextual elements still are valid for the program today and in the same degree; for revising original goals and objectives.	Basis for determining if initial planning for program needs to be re-surveyed or re-evaluated (area study). Basis for determining if contextual element changes are serious enough to warrant program modifications or drastic revisions.

II - Input Evaluation

	THEORY	OPERATION
A--OBJECTIVE	To identify and assess the capabilities of the instructional system, the input strategies, and the administrative and supervisory designs for implementing the strategies in terms of program inputs.	Compare actual inputs into the school program versus those which were identified in the program planning stages and for which the area instructional program was designed. Determine continuity of policy and program if actual inputs have differed from those which were estimated.
B--METHOD	By describing and analyzing available and material resources, solution strategies and procedural designs for relevance, feasibility and economy, the best program course of action may be determined.	Survey or estimate what is needed: policy, plant, staff, equipment, supplies, communications, transportation, students. Determine what is available in light of necessary changes in that which must be obtained at varying degrees of cost. Set up a timetable of input changes versus the practicality of their implementation so

B--METHOD (continued)		that the educational system does not function less efficiently during the changeover or program strengthening processes.
C--APPLICATION	For selecting those sources of additional support appropriate to the segment of the instructional program which needs to be strengthened, or for selecting sources of support from I - A and B (Context Evaluation) operations, solution strategies, and procedural designs for programming instructional change activities if needed.	To determine which student, faculty, and other inputs selection policy and procedural changes need to be made to update a program of instruction. To determine if variances in input policies, strategies, and implementation practices can account for variances in school quality.

III - Process Evaluation

	THEORY	OPERATION
A--OBJECTIVE	To identify or predict in process, those variances or defects in the implementation or procedural design which can account for differences in program quality, between schools or between the planned program quality, level and that which is being achieved.	To recognize when critical points vital to program quality have arisen, to be able to identify the basis for administrative judgments made at these points and to determine which process changes made as a result markedly affect the success or non-success of the whole vocational program.

B--METHOD	By identifying past and present barriers or implementation agents to the present program of instructional activities.	Reconstruct a time line or log of important activities or developments since the program began; compare against original planning and procedures documents, examine annual budgets for shift in program purposes, interview former and present staff, students, advisory committees and the like, relate to perceptions of program development nature and quality.
C--APPLICATION	For implementing and refining program changes; for establishing valid criterion measures as the basis for a system of program quality control.	For on-going decision-making whether to continue the present program as originally planned or shift to alternates which are suggested by results of operations under A and B above; for monitoring adherence to program development timetables, for determining if outside experts need to be called in, or if major budget shifts or revisions need to be made.

IV - Product Evaluation

	THEORY	OPERATION
A--OBJECTIVE	To relate program <u>outcome information</u> to its objectives and to context, input and process evaluation resultant information.	To have a valid basis for judgments as to the success of the entire program as a whole versus each of its stated objectives; to determine accuracy of previous

A--OBJECTIVE (continued)		estimates of student-faculty-community environment variables and input resources, and the total cost-benefit of the operational processes.
B--METHOD	By defining operational and measurement criteria associated with the objectives, by comparing these measurements with pre-determined success standards or inter-school comparative bases, and by interpreting the outcomes of the program in terms of recorded context, input, and process evaluation information.	Collect, classify, and assign judgmental weightings to the evaluation results obtained from context, input and process evaluations. Involve panels of students, faculty, business people, parents, labor, outside experts, to pass upon these judgments before final accounts of evaluation results are written.
C--APPLICATION	For making long range program plans based on evaluation outcomes, for deciding to continue, modify, or refocus, on-going change activities or identifying needed new ones.	Basis of recommendation that original or evolving program of vocational activities needs to be continued, drastically modified or terminated as completed or ineffective in light of objectives. Basis for pinpointing where short and long range program change planning should take place, estimating timetables, and designing a foresight, rather than hindsight system of evaluation which can yield needed feedback information as it is going on as a built-in program element.

Summary of Identification Criteria for CIPP Evaluation

This detailed examination of the CIPP Model has revealed criteria which might be used to identify generally the type of activities which are related specifically to context, input, process or product evaluation.

More definitively, characteristics unique to each individual type of evaluation descriptive of the CIPP Model and related to building construction facilities can be classified as follows:

Context Evaluation:

1. The component parts of the geographical area for which facilities were designed; for example: economy, population, labor markets, competitive educational opportunities, financing, community interest, community elements, leadership roles.
2. It focuses on factors important for achieving goals.
3. It projects societal needs and values, technological advances, political trends, economical developments, and population statistics.
4. It is concerned with relationships between manpower needs and availability of training facilities.
5. It is concerned with budgetary aspects and its effect on the educational system.
6. It is concerned with availability of teachers to provide educational service.
7. It involves instructor load and its effect on research and instructional programs.

8. It focuses attention on adjustments to facilities as related to student needs.
9. Involves monitoring systems to determine if goals are met.
10. Evaluates discrepancy information; for example: equal opportunities for students of differing socio-economic, racial, and cultural backgrounds; high failure rate; negative attitudes of students in specific subject areas; dropout rate; standardized testing.
11. Determines the specification for product evaluation.

Input Evaluation:

1. Concerns itself with policies, plant, staff, equipment, supplies, communications, transportation, and students, which may account for variances in school quality.
2. Involves utilization of resources to meet program goals.
3. Is concerned with program objectives, strategies to meet objectives, potential costs and benefits, staff training, procedures to implement strategies.
4. Operationally, it involves utilization of existing staff and facilities as well as scheduling of events and activities to guide strategy implementations.
5. More globally, it involves attitudes of parents, teachers, students, community, and certain aspects of administration which pertain to a given strategy.
6. Involves specification of procedure, materials, facilities, equipment, schedule, organizational scheme, staff requirements, and budgets.

7. Occurs prior to the operationalization of the change project.
8. Provides specifications for process evaluation.

Process Evaluation:

1. Identifies interpersonal relationships among staff and students.
2. Is concerned with communication channels, logistics, understanding, and agreement with the intent of the program by persons who are involved with it and are affected by it.
3. Examines the adequacies of resources, physical facilities, and time schedules.
4. Involves projecting and servicing preprogrammed decisions during implementation of a project.
5. Information for this evaluation is collected daily, organized systematically, and analyzed periodically.
6. Focuses on activities developed since initiation of the program.
7. Involves factors which need to be compared on the basis of organized planning and procedures.
8. Assesses the extent to which procedures are operated as intended.

Product Evaluation:

1. Involves the relating of program outcome information to its objective.
2. Is concerned with collection, classification, and assignment of judgmental weightings to evaluation results from the evaluation.

3. Recommends course of action to take in view of available information.
4. Concerns itself with ultimate outcomes which are to be achieved in a project.
5. Occurs during and after the project.
6. Investigates the extent to which objectives have been or are being attained.

This summary of the basic characteristics of the four types of evaluation which comprise the CIPP model has evolved from an examination and assessment of literature presented by evaluation authorities who have advanced observations concerning the various aspects of this model. In developing the model for this study, the researcher has selected factors which are related to the operation of educational institutions. The following section of this chapter provides a basis for this selection.

FACTORS SIGNIFICANT TO UTILIZATION OF FACILITIES

As a consultant to an international organization referred to as the Organization for Economic Co-operation and Development (OECD), Oddie has examined problems concerned with the effective use of school building resources. Specifically related to problems of intensive use, Oddie makes the following observations:

> It is self-evident that the effective use of school building resources demands that schools be used as intensively as possible. . . . Intensive utilization clearly requires that the number of pupils a school is designed to accommodate should not exceed its recruitment potential.

> Traditionally, such a school consists of a number of general classrooms supplemented by laboratories and workshops of practical teaching, a gymnasium, and possibly playing fields for physical education, library, and perhaps one or two other supplementary educational facilities serving the whole school. As a result, whenever a class is at work in a laboratory, or workshop, or gymnasium, its own room is left unoccupied, and for as long as all classrooms are in use, the special accommodation is not. Major economies can be affected by accepting some modification of this pattern of use.
>
> The easiest modification to make is to accept that even where the class remains the basis of school organization, it does not necessarily demand a general classroom as its headquarters, and that in certain conditions, at least other spaces in the school may be equally suitable for this purpose. Assuming this modification, it then becomes possible to determine the minimum number of each kind and size of teaching space required for a given number of pupils following a given curriculum, leaving for subsequent decision, the question of whether extra rooms are needed for class bases. (12, 19)

<u>Educational Specifications Approach to Utilization of Facilities</u>

The problem of intensive use as advanced by Oddie appears to be oversimplified for the solution is more complex than merely reassessing the need for class bases. In support of this, MacConnell states:

> Perhaps the weakest link between planning and building is interpreting the needs of those using the completed facilities. This problem of interpreting demands a fresh approach to school planning--a formulation of a systematic procedure for designing facilities for schools. (8, 145)

While MacConnell concurs with Oddie that accurate enrolment projections should be made, and various curriculum considerations should be observed in the operational stages of the school, the item of highest priority in MacConnell's view is educational specifications. An observation relative to this view follows:

> To accomplish a functional and economical school design, facts are needed concerning the school program during the initial planning stage. The proposed procedure is, in essence, a fact-finding process--a cooperative task for educators, students, and lay people to analyze, describe, and interpret the program so that it can become the base for the architect's decisions. The program materials prepared for these purposes are the "educational specifications". (8, 145)

MacConnell appears to be suggesting very precisely that utilization is a factor of a variety of complex variables related to the functions of the facility, a theoretical formulation of the facility, and the descriptions, suggestions, and illustrations of the facilities which encompass the functions of the school organization. Although, MacConnell expresses concern about developing educational specifications which will provide a framework for planning educational facilities, the terms of reference used are structured on the basis of the use of a designated area for a specific purpose. Consequently, educational specifications are developed with the view of providing required facilities for designated programs to ensure maximum utilization effectiveness and efficiency. To attain a desirable result, MacConnell has suggested various basic factors which must be taken into consideration by those planning these facilities. According to MacConnell, two operational steps are involved in identifying these factors. The first step involves both a survey of the community conducted by educational consultants, high school students, or civic organizations to determine the needs and interests of the various populations to be served by the school, and a recommendation

of rubrics which should be used to analyze the functions of teaching and learning. These include:

Curriculum structure: organizing the number of periods and probable sizes of classes, based on projected and current class enrolments. Each community must work out its own desirable pupil-teacher ratios.

Purposes: developing the aims and objectives of the program based on the survey, and by other methods such as conducting public forums, forming discussion groups in the local service organizations, and consulting leading educators.

Personnel: describing the necessary qualifications of the teachers for effective teaching of the proposed program.

Clienteles: designing the program in terms of the characteristics, developmental tasks, and imperative needs of the students.

Culture: planning the program with an understanding of the the changing culture of the school, community, and American culture.

Content: selecting the number and kinds of activities for the program based on data of the survey and value judgments of the planning committees. This section is concerned with possible curriculum revision. The various committees in each area will evaluate the existing curriculum.

Process: suggesting that the teaching-learning procedures be based on democratic procedures and insight into psychological factors of learning, such as motivation and individual differences.

Product: recognizing that the outcomes of process are two-fold: the student as product and the student's educational product.

The second step is the problem of relating the factors of school planning to the school program. This part of the procedure is concerned with such factors as (1) zoning, (2) supervision, (3) flexibility, (4) thermal environment, (5) color-conditioning, (6) acoustical treatment, (7) utilities, (8) luminous environment, (9) maintenance and safety, (10) audio-visual considerations, and (11) storage, furniture, and equipment.

The third step is concerned with the arduous task of describing, suggesting, and illustrating the proposed facilities. This thinking is based on the knowledge of the school program and related factors in school planning. Operationally, this step includes: (1) making a spatial relationship diagram for each activity in terms of location,

> processes, storage needs, display spaces, and special utility needs; (2) describing in detail each activity in terms of the proposed number of work stations; and the amounts, types, and sizes of tools, materials, furniture, and equipment needed for each station; and (3) making sketches or models for further communication with the architect. (8, 146)

Standards-Approach To Effective Utilization of Shop Facilities

In his study (University of Michigan) of standards for use in evaluating the physical facilities of industrial-art shops or laboratories, Bateson has developed a set of standards which contribute to the effectiveness of a functional school shop. This list serves both as an aid in checking plans and specifications for new shop facilities and as a means for developing educational specifications as related to lab type facilities. Features which Bateson is primarily concerned about are shop space, flooring materials, types and styles of doors, partitions and walls, shop location, storage and special areas, visual comfort details, plumbing details, heating and ventilating details, electrical circuit details, and miscellaneous considerations. Only those items "where there was substantial agreement among jurors that the standard made a contribution to the effectiveness of the school shop" (15, 21) were reported by Bateson who suggests the following:

> . . . the chief value of the lists will come in the assurance that important considerations are not being overlooked when a new shop is being planned, or present facilities are being evaluated. (15, 21)

While the emphasis of the standards approach is focused primarily on specific aspects related to the shop facilities

evaluation, Bateson's views, relating to the standards which involve efficiency and effectiveness of utilization of physical facilities, do not appear to be at variance with the view expressed by MacConnell on this topic.

Self-Evaluation Approach To Effective Utilization

The National Study Committee on Secondary School Evaluation is not so much concerned with standards as it is with guidelines which can be used to evaluate various aspects related to the school operation. The committee presents conditions and characteristics which have been observed in the more highly successful schools. However, the Study Committee recommends that statements utilized for evaluative criteria be modified to obtain consistency with local philosophy, objectives, and functions as well as school and community characteristics.

Specifically, with respect to the school plant, the National Study Committee provides some general guiding principles related to the plant's function. The committee states:

> Buildings should be planned, as far as possible, so that they will meet future enrolment and program needs as well as present needs. Flexibility of use should be a feature of the building. The best combination of efficiency and economy should be sought.
>
> The planning of the building should take advantage of important features of the site. The interior and exterior of the building should be attractive and appropriate in design so that esthetic quality is evident. The grounds about the building should include well-kept lawns and shrubbery. These features and other natural features of the immediate environment should be used whenever appropriate for learning activities. The school plant should be an

> integral part of a community planning program. The entire plant should stimulate students to use its facilities effectively. (10, 257)

This suggests that a variety of factors stimulate the utilization of space provided for educational purposes. The National Study Committee supports this view further by presenting factors which are considered significant in assessing the local situation. Essentially, this is a method for self-evaluation based on the perception of the evaluator.

The committee has advanced criteria which are rather global in relation to the total operation of an educational institution. In selecting criteria significant to an individual evaluation of operations, the evaluator must select those factors significant to a specific assessment. While factors which might be significant to utilization are not specifically identified, some of the items listed may have varying degrees of importance and/or influence on the utilization of physical facilities provided for educational purposes.

General categories related to or influenced by educational activities are presented by the Study Committee. The specific aspects which are given careful consideration are: (1) program of studies; (2) subject fields involving organization, nature of offerings, physical facilities, instructional staff, instructional activities, instructional materials, methods of evaluation, outcomes, and general evaluation of the subject fields; (3) student activity programs; (4) instructional materials services--library

and audio visual; (5) guidance services; (6) health services; (7) school plant; and (8) school staff and administration. (9, 370)

The efficient and effective operation of an educational institution depends upon factors not only directly related to activities in the school, but those also which have an indirect relationship to it. In view of this vast and complex subject, it is not possible in this study to determine the factors which may influence specific aspects of all the responsibilities which are charged to educational institutions. It is anticipated, however, that an examination of aspects associated with the school operation will assist in identifying the components and factors specifically significant in making a utilization of building construction facilities assessment.

Authorities have expressed concern that the necessary stimulant be provided to ensure that facilities are utilized most efficiently and effectively. Spontaneously, they have provided criteria to identify factors which are significant to achieving the organization's objectives.

SUMMARY

The views expressed by scholars, quoted in previous sections of this chapter, substantiate the selection of activities essential to the operation of an institution concerned with educating students within established structures as isolated in this Chapter, namely, administrative, instructional, program, staff, occupational, community, student, facilities and equipment,

counselling, and policies. In addition, however, they have provided ample evidence that a variety of factors which are related to specific operational functions have certain degrees of influence on utilization of building construction facilities in the comprehensive high school.

CHAPTER REFERENCES

[1] Campbell, R. F., and R. T. Gregg, Administrative Behavior in Education. Harper and Brothers Publisher, New York, 1957.

[2] Clark, D. L., and G. G. Guba, "An Examination of Potential Change Roles in Education," in National Education Association Center for the Study of Instruction, Rational Planning in Curriculum and Instruction, Washington, D.C., 1967.

[3] Evaluation Criteria for Junior High Schools, National Study of Secondary School Evaluation, Washington, D.C., 1963.

[4] Fortune, J. C., "Introduction to Evaluation," A Guide to Evaluation, Massachusetts Information Feedback System for Vocational Education. First Technical Progress Report, Massachusetts Department of Education, Division of Research and Development, September, 1969.

[5] Hammond, R. L., "Evaluation at the Local Level," Project EPIC, 1967.

[6] Hastings, T., "The Why of the Outcomes," A paper presented to American Education Research Association, (AERA) Symposium of Measurement Problem in Curriculum Evaluation, February, 1965.

[7] Kaufman, J.J., "Cost-Effectiveness Analysis as a Method for Evaluation of Vocational and Technical Education." A paper presented at the annual meeting of the American Vocational Association, Dallas, Texas, December 10, 1968.

[8] MacConnell, J. D., Planning for School Buildings. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1957.

[9] National Study of Secondary School Evaluation, Evaluation Criteria, Washington, D.C., 1960.

[10] National Study of Secondary School Evaluation, Evaluative Criteria of Junior High School, Washington, D.C., 1963.

[11] Neal, W. D., "Evaluating a School's Program," E. Miklos and A. N. Stewart, Developing a Concept of the Principalship, The Policy Committee, Leadership Course for School Principals, 1967.

[12] Oddie, Guy, "School Building Resources and Their Effective Use," Organization for Economic Cooperation and Development, 1961.

[13] Pace, C. R., "Evaluation Perspectives: 1968, A Working Paper unpublished in present form. University of California," in A Guide to Evaluation, Massachusetts, Information Feedback System for Vocational Education, September, 1968.

[14] PDK National Study Committee on Evaluation, "Educational Evaluation and Decision-Making," F. E. Peacock, Publishers, Inc., Itasca, Illinois, 1971.

[15] Prakken, L. W., "Standards for Physical Facilities of School Shops Developed in Research Study." Modern School Shop Planning. Prakken Publications, Inc., Ann Arbor, Michigan, 1961.

[16] Provus, M., Discrepancy Evaluation. McCutchan Publishing Corporation, 2526 Grove Street, Berkeley, California 94704, 1971.

[17] Rhodes, Eric, et al., "Recommended Facilities and Space Requirements." An Addendum to the Report, Recommended Occupational Curriculum Offerings, Arlington, VA: Educational Service Bureau Inc., 1965.

[18] Robertson, A. G., "Applying Systems Analysis Techniques to the Evaluation of Vocational Programs." Journal of Industrial Education, Vol. 6, No. 3, Spring, 1969.

[19] Scriven, M., "The Methodology of Evaluation." In Tyler, R. W., et. al., Perspectives of Curriculum Evaluation, Rand McNally and Co., Chicago, 1967.

[20] Stufflebeam, D. L., "A Depth Study of the Evaluation Requirement." Theory Into Practice, Volume V, No. 3, (pp. 121 - 133) June, 1966.

[21] Stufflebeam, D. L., "Evaluation as the Basis for Decision-Making." A paper presented to the American Educational Research Association,Chicago, Illinois, February 8, 1968.

[22] Stufflebeam, D. L., "Evaluation as Enlightenment for Decision-Making." An address delivered at the Working Conference of Assessment Theory, Sarasota, Florida, January 19, 1968.

[23] Stufflebeam, D. L., et al., Educational Evaluation Decision-Making. F. E. Peacock Publishers, Inc., Itasca, Illinois, 1971.

CHAPTER III

METHOD OF CONDUCTING THE STUDY

The major objective of this research was to develop a model that might be used to evaluate the utilization of facilities used for secondary school industrial-vocational education programs. To construct this model it was anticipated in the first instant that components significant to evaluation of utilization of building construction facilities could be categorized into compartments related to some credible evaluation construct. Secondly, it was assumed that the elements which influence the utilization of facilities provided for the building construction program could be identified.

THE POPULATION AND SAMPLE

Information was elicited from two discrete samples selected from a population of all school systems in the Province of Alberta which offered programs in secondary industrial-vocational education. One sample consisted of all the principals in the high schools of Alberta where a high school building construction program was offered. These individuals made sample 1.

The other sample involved all teachers who taught a building construction course at the high school level. These

teachers made up the second sample involved in the study. These samples were selected because of their intimate knowledge and close working relationship with the various aspects of their school's building construction program. More specifically, high school principals of schools that offer a building construction program were selected because they are most closely associated with, or most concerned about, the evaluation of the school's programs to ensure the efficient and effective operation of the school. Building construction teachers were selected because they are closely associated with all instructional aspects of the building construction program.

To select principals and teachers for participation in this study they were identified from the list of high school building construction teachers and their principals which is compiled annually by the Alberta Provincial High School Inspector of Industrial Education. The list, current at the time of this investigation, contained 27 principals who were responsible for administrating schools where a building construction course was offered and 31 building construction teachers in schools where the high school building construction program was taught.

INSTRUMENTATION

Design of the Survey Instrument

Since a standardized survey instrument, or an instrument previously developed, was not available, it was necessary to design a research instrument which could be used for this study to yield

pertinent data for analysis. The critical elements involved in the designing of such an instrument were related to its content, form, validity, and reliability.

The content element was resolved by the researcher conducting a review of the related literature which identified a variety of factors which authorities in the field of evaluation consider significant to the normal operation of the school. This included those factors that are directly related to the school's operation, as well as those factors that had an indirect relationship to the school's operation. In selecting those factors for inclusion in the survey instrument three criteria were established. The first criterion considered was that the factors must be as comprehensive and representative as possible of activities related to the operations of an educational institution. The second criterion was that the factors should have significance for those aspects that are related to the building construction program. The third criterion that was established was that the survey instrument should contain only those factors which a Panel of Experts had assessed as having relevancy to the study.

From the review of the related literature there are ten activities which scholars of evaluation believe to be influential on operational functions of a school. These are, administration, instruction, program, staff, occupational, community, student, facilities and equipment, counselling and policy. An in-depth research of the resource texts for each of these activities was made to identify factors that were commonly considered by

authorities on evaluation to be important components in the process of operating a comprehensive high school. From this research 101 factors were identified which were directly related to one of the ten activities identified by the library research. These 101 factors were presented to a Panel of Experts which consisted of an expert in each of the following areas: educational research, educational planning, and educational administration. From the recommendations of the Panel the 101 factors were reduced to 92 while all ten general activities were retained. The factors selected for inclusion in the survey instrument satisfied the established criteria and were incorporated in the final form of the survey instrument. A copy of the instrument may be found in Appendix A, page 159.

Prior to using this instrument in the major study it was reviewed by the major advisor for the research. Following this review it was reviewed by an expert from the Department of Educational Psychology, Faculty of Education, The University of Alberta, who is considered by his peers to be an expert in instrument design.

The purpose of this review was to determine: if questions were properly worded to eliminate ambiguity; if questions were properly sequenced; and if questions would yield pertinent data which could be analyzed. From the recommendations for modification made by this expert, questions were either rewritten or eliminated from the final form of the instrument.

The Survey Instrument Used

In its final form the survey instrument included a six point Likert scale (2, 366). The decision to use the six point Likert scale was based upon the number of items which participants were asked to respond to; the ease of indicating a response to each statement; and the ease of analyzing responses of participants.

Although identical items were used for each of the survey instruments administered to both samples, the principals in sample 1 were asked to indicate the degree of importance they perceived each item to have in evaluating the utilization of high school industrial-vocational building construction facilities. The building construction teachers of the second sample were asked to indicate the degree of influence they perceived each item to have on the utilization of high school industrial-vocational building construction facilities. Participants in both samples were asked to rate each factor on a six point scale based on the following values:

Principals: 5 - A high degree of importance

4 - A fairly high degree of importance

3 - A medium degree of importance

2 - A fairly low degree of importance

1 - A low degree of importance

0 - No importance

Building Construction Teachers:

5 - A high degree of influence

4 - A fairly high degree of influence

3 - A medium degree of influence

2 - A fairly low degree of influence

1 - A low degree of influence

0 - No influence

In addition, each participant in the teacher sample was asked to select a word or statement which most nearly described each factor as it pertained to the situation that existed in their school. The teachers who participated in this study were asked to supply background information on the qualifications they possessed to teach the course in building construction and on student enrolment in their courses.

Validity

In an attempt to validate the instrument the Panel of Experts referred to in a previous section of the chapter (page 71) was asked to assess each item selected using the following criteria:

1. The completeness of the general activities which had been selected and the specific factors which were associated with each as they related to operational activities (directly and indirectly) of an educational institution.
2. An indication of contradictory or overlapping statements.
3. The accuracy of each statement for its understandability.

Based on recommendations made by the experts, the necessary alterations were made to the survey instrument.

The in-depth review and analysis of the related literature was a further validation of the survey instrument. This is based on the researcher's observation that if the "validator assumes that the predictor is representative of a given class of situations, he is involved in content validity" (1, 36). The items included in the survey instrument were judged to be representative of the subject under investigation by the researcher and the selected experts.

Reliability

As a check on reliability a split half comparison of responses was made. Members of each sample were identified by sequential numbering and responses were split into halves (odd numbered items in one half and even numbered items in the other half) from which separate scales were compiled and compared. Correlation matrices were calculated for each instrument using the Pearson product moment coefficient of correlation formula (3, 78). To determine the coefficient of reliability, the Spearman-Brown modified formula was used (3, 332). A matrix of these results are included in Chapter 4.

ADMINISTRATION OF THE SURVEY INSTRUMENT

Pilot Test of Survey Instrument

Before the survey instrument was used in the major study it was pilot tested using a group who were not involved in the major study. The purpose of this study was to determine if

the instructions to the participants were without ambiguity and if the questions of the survey instrument were understandable. An analysis of the responses collected in this study indicated that no further modifications were necessary.

To secure the cooperation of district superintendents whose district had a school which offered a building construction program, correspondence was initiated. The 14 superintendents contacted indicated that they had discussed the research with their principals and building construction teachers and that they were willing to cooperate in the study. Appendix B, page 197 contains copies of this correspondence.

It is significant to note that responses to the researcher's request for permission to conduct this study in cooperating schools came in various forms. While most of the superintendents of districts which were located in outlying localities responded by mail, three replied by telephone indicating their interest in this research study. The Research Officer and Supervisor of Vocational Education in one district requested an interview with the researcher to discuss the purpose of the research.

Following the granting of this permission a covering letter (Appendix B, page 214) explaining the purpose of the study and a survey instrument were mailed to each principal and teacher in comprehensive high schools where a building construction program was taught. From a total of 27 principals 24 completed

questionnaires were received. This represented an 88.8 percent of return for the principal sample. A follow-up letter (a copy of this letter appears in Appendix B, page 216) was mailed 17 days later to increase the percentage of return. From the follow-up letter no additional survey instruments were received.

Covering letters, questionnaires, and stamped, self-addressed envelopes were also mailed to teachers of building construction in participating schools. From this sample of 31 teachers, 21 submitted completed instruments. This represented a return of 67.7 percent. To teachers who did not return the instrument a follow-up letter was sent 17 days after the first contact was made. (A copy of this letter can be found in Appendix B, page 216.) This technique produced an additional completed instrument. The total percentage of instruments received from building construction teachers was 71.0 percent. The completed survey instruments were analyzed and data were placed in tabulated form for ease of analysis. These data will be discussed more thoroughly in the next chapter.

DATA ANALYZING PROCEDURE

The process of analyzing the data involved the researcher tabulating the responses on the basis of the degree of importance to the evaluation of utilization of high school building construction facilities each respondent in the principal sample gave to each of the selected factors. The same procedure was

followed for the teacher sample in determining the influence that each factor had on the utilization of high school building construction facilities.

The tabulation consisted of presenting the factors in each section of activities in a matrix which listed the statements in rank order to the left and the number of responses made for each item under the original scale values at the top. As noted on page 72, responses with the highest numerical value carried the greatest weight. Factors to which participants had not responded were treated as though they were insignificant and tabulated under the 0 column. Additional information included in the matrix provided data involving the percentage of responses in each category on the scale. An analysis of the data obtained from the principal sample indicated the degree of importance each statement was perceived to have for evaluating the utilization of high school building construction facilities.

An indication of the influence each statement was reported to have on the utilization of such facilities was obtained from the teacher sample. In each case, factors which had values of 4 or 5 assigned to them were considered to be highly significant to the assessment. Data from the principal sample were used further for the development of a macro model while sample two data with the additional information provided on the research instrument (tabulated separately to determine commonalities) were used to develop a micro model. The development of both models is presented in Chapter V.

CHAPTER REFERENCES

[1]Blum, Milton L., Industrial Psychology. Harper and Row, Publishers, 1968.

[2]Selltiz, C., et al., Research Methods in Social Relations, Henry Holt and Company, Inc., 1960.

[3]Wert, James E., Statistical Methods in Educational and Psychological Research, New York, Appleton-Century-Crofts, Inc. 1954.

CHAPTER IV

PRESENTATION OF THE FINDINGS

The development of this research involved four important operations. First, the subject of evaluation was examined to determine evaluation criteria which had implications for this study. Secondly, dimensions representative of and related to operational activities in secondary schools in Alberta were compiled. Thirdly, a method of measuring these components for comparison purposes was developed. Finally, comparison data were refined for their application to constructing the model for evaluating the utilization of facilities provided for building construction programs.

Data related to the importance of various factors to the evaluation of utilization of facilities provided for high school building construction programs in selected schools and the influence of these factors to the utilization of such facilities in these schools was elicited from school principals and building construction teachers with a survey instrument prepared specifically for that purpose. Ninety-two factors which represented ten activities related to school operation were selected for inclusion on the survey instrument. A Likert scale was used to provide a scale of values for responses that participants

assigned to each of the factors on the research instrument. The data obtained were analyzed using a frequency of response matrix to provide the basis for further assessment. The same data were then organized in tabular form to illustrate a distribution for responses made by each sample involved in the study. Since this was classified as a developmental study a complete analysis based on the normal distribution concept was not considered necessary. The required comparisons of data could be made using a percentage configuration. In fact, for the purpose of this study percentage comparisons provided ratios which had a high degree of significance in the construction of a model (this is discussed in a subsequent chapter).

RESULTS OF THE RELIABILITY TEST

In an attempt to determine the measure of reliability of the survey instruments in terms of stability of responses a split-half computation for reliability was administered on responses made to each statement on each of the instruments. Mechanically, all twenty-four returns received for the principal sample were split in half according to whether they were numbered evenly or oddly. The same procedure was used for the twenty-two returns received for the teacher sample. The data reported for each half of the principal sample was analyzed and correlated to determine the coefficient of reliability using the Spearman-Brown modified formula. Responses for the teacher sample were

similarly analyzed and correlated. The matrix presented in Table I tabulates the results which revealed a coefficient of reliability of .94 for the principal sample and a coefficient of .97 for the teacher sample.

TABLE I

COEFFICIENCY OF RELIABILITY

	Standard Deviation		Coefficient of Correlation	Coefficient of Reliability
	EVENS	ODDS		
Sample 2	21.99	24.83	0.94	0.97
Sample 1	18.84	20.88	0.88	0.94

RESEARCH FINDINGS FROM THE PRINCIPAL SAMPLE SURVEY

Summarized in tabular and graphical form, obtained data are reported for each of the activities surveyed.

The entire group of principals who were administrators in comprehensive high schools of Alberta where a building construction program was taught composed the principal sample for this investigation. Research findings for the sample are reported as frequencies or percents, in some instances cumulative values of frequencies and percents are also included for responses where such data were considered of some value and added to the meaningfulness of the study.

Although a six point scale of values was used to identify the importance of each statement, only cumulative frequencies of important responses (summation of responses scaled 4 and 5) and unimportant responses (summation of responses scaled 0, 1, 2, and 3) are tabulated in order to provide a more meaningful basis for the study. The purpose of using a six point scale was to provide a fairly wide range of selection to participants to choose from. Complete details of the responses from the principal sample appear as Appendix C, page 218.

Cumulative frequencies of important responses based on the principals' ratings of factors related to the evaluation of utilization of high school building construction facilities are listed in rank order in distribution Tables II to XI, inclusive. An examination of the tables readily reveals the relative importance that principals of comprehensive high schools in Alberta assign to each of the factors within specific operational activities. A further analysis involving specific observations related to the tabulated information has implications for development of the model. Only those factors rated important (summation of responses scaled 4 and 5) by over 50 percent of the principal sample were selected for construction of this model.

Administrative Factors

Table II summarizes principals' ratings pertaining to the importance of administrative factors for evaluating utilization of the selected facilities. Information in this table shows

TABLE II

DISTRIBUTION OF PRINCIPAL RESPONSES BY ADMINISTRATIVE FACTORS

Administrative Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
4. Educational philosophy of the principal in relation to the vocational program.	21	3	87.5	12.5
5. Administrative planning in the activities related to the building construction program.	17	7	70.8	29.2
6. Organizing ability to fulfill educational goals.	17	7	70.8	29.2
2. Decision-making procedures.	15	9	62.5	37.5
3. Interstaff communication.	15	9	62.5	37.5
1. Leadership technique.	14	10	58.3	41.6
8. Success in coordinating school activities.	14	10	58.3	41.7
7. Evaluation procedures which the administrative staff uses to measure the achievement of organizational goals.	13	11	54.2	45.8
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes.	13	11	54.2	45.8
10. The level of professional preparation of personnel appointed to administrative positions.	10	14	41.7	58.3

* See glossary of terms and abbreviations, page xv

that all the factors but one were rated as important by over 50 percent of the principals. Factor number 10--the level of professional preparation of personnel appointed to administrative positions--was considered unimportant to such an assessment. The fact that over 70 percent of the principals rated such factors as the educational philosophy of the principal in relation to the vocational program, administrative planning in activities related to the building construction program, and organizing ability to fulfill educational goals as important to evaluating utilization of high school building construction facilities is significant to note insofar as the administrative function of a school is concerned and the fact that 87.5 percent of the principals rated the educational philosophy of the principal important is even more noteworthy.

Instructional Factors

The importance of instructional factors on the evaluation of utilization of building construction facilities shown in data in Table III indicates an expression of 83.4 percent consensus that the instructional methods used by the instructor and the class size assigned to the instructor are important evaluative criteria. The effect of student participation in extra-curricular activities was judged by above 90 percent of the principals to be unimportant for utilization evaluation of these facilities. Grouping of students, also, was not a strong factor in effecting such an evaluation. It had a rating of 20.8 percent and was eliminated from the study.

TABLE III

DISTRIBUTION OF PRINCIPAL RESPONSES BY INSTRUCTIONAL FACTORS

Instructional Factors	Responses *f		*%	
	*n_1	*n_2	n_1	n_2
1. The instructional methods used by the instructor.	20	4	83.4	16.6
3. The class size assigned to the instructor.	18	6	75.0	25.0
4. The suitability of student work station arrangement.	16	8	66.7	33.3
2. The instructional load (number of courses)of the instructor.	15	9	62.5	37.5
8. Course scheduling	15	9	62.5	37.5
5. The suitability of arrangement of job areas for specialized activities.	15	9	62.5	37.5
9. Length of class periods.	12	12	50.0	50.0
7. The adequacy of expendable instructional materials provided in the school	11	13	45.8	54.2
10. Student participation in planning	10	14	41.7	58.3
6. Grouping of students (i.e. homogeneously, heterogeneously, randomly.)	5	19	20.8	79.2
11. The effect of student participation in extra-curricular activites.	2	22	8.4	91.6

* See glossary of terms and abbreviations, page xv

Program Factors

Principal rating of program factors is summarized in Table IV. The program factor which was rated as important by the greatest number of respondents was, the purpose of the course, that is, whether it is used as an optional subject or for skill training purposes, was rated by 75 percent of the principals. It is interesting to note, however, that the entrance prerequisites of the program was perceived by an equal ratio of principals as unimportant when they rated this factor as low as 25 percent.

Staff Factors

The extent to which staff factors were considered important to the evaluation of utilization of high school building construction facilities is shown in Table V. The degree of importance placed on staff factors was more consistently favourable in effecting a utilization assessment for building construction facilities. The teacher competence factor, however, was rated by principals to be the single factor which was endorsed by all principals, but one, to be the most important factor in making a utilization evaluation. Teacher participation in curriculum development, anticipated results of the program as perceived by the teacher, professional cooperation of the teacher with his colleagues and the availability of qualified instructors received a relatively high endorsement for inclusion in such an evaluation.

TABLE IV

DISTRIBUTION OF PRINCIPAL RESPONSES BY PROGRAM FACTORS

Program Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
4. The purpose of the course - whether it is used as an optional subject or for skill training purposes.	18	6	75.0	25.0
8. The criteria which are used to evaluate student performance.	17	7	70.8	29.2
5. Program promotion by the school.	16	8	66.7	33.3
6. Availability of programs to all students (both boys & girls) having the required prerequisites.	16	8	66.7	33.3
7. Means of integrating other courses with the building construction program.	15	9	62.5	37.5
1. The credit value assigned to a specific building construction program.	13	11	54.2	45.8
9. The existence of other competitive educational opportunities.	12	12	50.0	50.0
3. The rate of student drop-out at any specific level.	11	13	45.8	54.2
2. The entrance prerequisite of the program.	6	18	25.0	75.0

* See glossary of terms and abbreviations, page xv

TABLE V

DISTRIBUTION OF PRINCIPAL RESPONSES BY STAFF FACTORS

Staff Factors	Responses			
	*f		*%	
	$^*n_1$	$^*n_2$	n_1	n_2
1. Teacher competence in the program (based on the knowledge of the the subject and teaching ability).	23	1	95.8	4.2
6. Anticipated results of the program as perceived by the teacher.	21	3	87.5	12.5
8. The availability of qualified instructors.	19	5	79.2	20.8
3. Teacher participation in curriculum development.	18	6	75.0	25.0
7. Professional cooperation of the teacher with his colleagues.	18	6	75.0	25.0
5. Staff awareness of the nature of the building construction program.	15	9	62.5	37.5
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association.	15	9	62.5	37.5
4. A teacher in-service training program.	7	17	29.1	70.9

* See glossary of terms and abbreviations, page xv

A teacher in-service training program, however, was not considered important in making an evaluation of this nature.

Occupational Factors

The importance of occupational factors as criteria for evaluating utilization of high school building construction facilities are reported in Table VI. Principals concur with a high degree of consensus that occupational opportunities for the student in the building construction program upon graduation is an important factor when such an evaluation is made. No bias was generally expressed toward financial remuneration for graduates upon employment as important or unimportant as an evaluative criterion.

Community Factors

Data in Table VII show how principals responded to community factors as relevant to a utilization evaluation for high school building construction facilities. 79.2 percent of the principals who responded agreed that parental encouragement for students to enrol in the building construction program was an important factor in an evaluation of this nature. Significantly, however, most indicated the industrial community support in encouraging enrolment in the building construction program as unimportant.

Student Factors

The principals' ratings concerning the importance of student factors in a utilization evaluation as they relate to

TABLE VI

DISTRIBUTION OF PRINCIPAL RESPONSES BY OCCUPATIONAL FACTORS

Occupational Factors	Responses *f *n_1	*n_2	*% n_1	n_2
1. Occupational opportunities for the student in the building construction program upon graduation.	22	2	91.6	8.4
4. Student success in finding employment upon graduation from the building construction program.	19	5	79.2	20.4
2. The significance industry places on training in building construction as a prerequisite for employment.	18	6	75.0	25.0
5. The existence of other competitive occupational opportunities.	14	10	58.4	41.6
3. Financial remuneration for graduates upon employment.	12	12	50.0	50.0

* See glossary of terms and abbreviations, page xv

TABLE VII

DISTRIBUTION OF PRINCIPAL RESPONSES BY COMMUNITY FACTORS

Community Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
7. Parental encouragement for students to enrol in the building construction program.	19	5	79.2	20.8
2. The industrial resources of the community.	13	11	54.2	45.8
3. The employability of the student in the immediate community.	13	11	54.2	45.8
1. The socio-economic environment of the individual student.	11	13	45.8	54.2
6. Industrial community support in encouraging enrolment in the building construction program.	10	14	41.7	58.3
5. The standard of achievement which the industry sets for employment.	8	16	33.3	66.7
4. The role which advisory board recommendations play in curriculum development.	7	17	29.2	70.8

* See glossary of terms and abbreviations, page xv

building construction facilities are shown in Table VIII. There was mutual consensus that the financial resources of the student were of no importance in this regard. This tends to indicate that a student will not be denied enrolment opportunity due to insufficient funds or this is a factor which would receive no consideration in the event that a choice of students is necessary due to oversubscription to the course. This assumption appears to be substantiated by the fact that 91.6 percent of the principals reported that opportunity given students to select the program based on their own interests was important to evaluating utilization of such facilities.

Facilities and Equipment Factors

According to data summarized in Table IX only approximately 38 percent (6 out of 16 factors listed) of the factors were rated by the majority of principals to be important in making an assessment of utilization for building construction facilities. These included such things as adequacy of size of the building (62.5 percent), provision of safety equipment (70.8 percent), general lighting standards (66.7 percent), availability of sufficient equipment for the building construction program (75.0 percent), availability of first aid equipment (66.7 percent), and adequacy of fire protection (66.7 percent). The interior design and decor of the building construction facility was considered by the largest number of principals (79.2 percent) to be unimportant to a utilization evaluation. Factors that provided for the general

TABLE VIII

DISTRIBUTION OF PRINCIPAL RESPONSES BY STUDENT FACTORS

Student Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
12. Opportunity given students to select program based on their own interest.	22	2	91.6	8.4
11. Student attitude towards the building construction program.	21	3	87.5	12.5
9. Student aptitude.	19	5	79.2	20.8
1. Availability of guidance staff to assist in making a program choice.	18	6	75.0	25.0
10. Student work habits.	18	6	75.0	25.0
5. Student competence resulting from instruction.	16	8	66.6	33.4
3. The apparent student capability in making a career choice at the high school level.	13	11	54.2	45.8
7. General student achievement.	11	13	45.8	54.2
2. The chronological age of the student.	10	14	41.7	58.3
8. Mental ability of the student.	8	16	33.3	66.7
4. Student enrolment projections.	7	17	29.2	70.8
6. Financial resources of the student.		24		100.0

* See glossary of terms and abbreviations, page xv

TABLE IX

DISTRIBUTION OF PRINCIPAL RESPONSES BY FACILITIES AND EQUIPMENT FACTORS

Facilities and Equipment Factors	Responses			
	*f		*%	
	$*n_1$	$*n_2$	n_1	n_2
2. Availability of sufficient equipment for the building construction program.	18	6	75.0	25.0
11. Provision of safety equipment.	17	7	70.8	29.2
3. General lighting standards.	16	8	66.7	33.3
12. Availability of first aid facilities.	16	8	66.7	33.3
13. Adequacy of fire protection.	16	8	66.7	33.3
1. Adequacy of size of the building.	15	9	62.5	37.5
6. Ventilation in the room designated for the building construction program.	12	12	50.0	50.0
9. Adequacy of disposal system for waste material created in the building construction area. (Saw dust, cuttings, fluids, etc.)	12	12	50.0	50.0
7. Adequacy of plumbing facilities (wash area, glue area, etc.)	11	13	45.8	54.2
8. Availability and distribution of utility services. (Gas, water, electricity, compressed air, etc.)	11	13	45.8	54.2
4. Standard of auditory comfort.	10	14	41.6	58.4

TABLE IX (continued)

DISTRIBUTION OF PRINCIPAL RESPONSES BY FACILITIES AND EQUIPMENT FACTORS

Facilities and Equipment Factors	Responses			
	*f		*%	
	$*n_1$	$*n_2$	n_1	n_2
5. Room temperature	10	14	41.6	58.4
14. Availability of building construction facilities and equipment to students outside the regular class time.	8	16	33.3	66.7
10. Proximity of vocational facilities to the academic instructional area.	7	17	29.2	70.8
16. Provision of security for projects, personal belongings, etc., in the designated area.	7	17	29.2	70.8
15. Interior design and decor of the building construction facility.	5	19	20.8	79.2

* See glossary of terms and abbreviations, page xv

comfort of occupants did not show a high degree of preference to either being important or unimportant to an evaluation of this type.

Counselling Factors

Factors related to counselling generated responses which indicated that accessability of job opportunity information to students and the adequacy of student selection procedures for entrance into the building construction program were important factors for evaluating utilization. The first of these, however, was rated by the largest number of respondents (75.0 percent) as an important criterion for such an evaluation, perhaps reflecting some of the conditions which exist within the counselling function of the schools. These data are found in Table X.

Policies Factors

Responses summarized in Table XI show that two thirds of the factors related to policies were viewed by principals as unimportant to evaluating facilities provided for the high school building construction program. Only one factor showed a substantial agglomeration of responses to indicate its importance to such an evaluation. This factor involved policies concerning equipment replacement. Two other factors which a majority of principals listed as important were materials purchasing policies and policies concerning educational success standards for the building construction program. It is interesting to note that

TABLE X

DISTRIBUTION OF PRINCIPAL RESPONSES BY COUNSELLING FACTORS

Counselling Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
2. Accessability of job opportunity information to students.	18	6	75.0	25.0
3. Adequacy of student selection procedures for entrance into the building construction program.	13	11	54.2	45.8
5. The source where recommendations to the student to enrol in a program usually originate.	12	12	50.0	50.0
4. The source where recommendation to provide specific programs in the school usually originate.	12	12	50.0	50.0
1. Availability of student records.	8	16	33.4	66.6

* See glossary of terms and abbreviations, page xv

TABLE XI

DISTRIBUTION OF PRINCIPAL RESPONSES BY POLICIES FACTORS

Policies Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
8. Policies concerning equipment replacement.	17	7	70.9	29.1
7. Materials purchasing policies.	14	10	58.4	41.6
9. Policies concerning educational success standards for the building construction program.	14	10	58.4	41.6
1. The definition of policies concerning activities related to the building construction program. (i.e. work experience, industrial tours, etc.)	8	16	33.3	66.7
2. The procedures used in formulating policies for the school.	8	16	33.3	66.7
3. Protection of building construction staff from exploitation by individuals in the school and agencies of the community.	7	17	29.3	70.7
5. The extent to which regulations concerning the building construction area are adhered to by all staff members.	7	17	29.1	70.9
6. Policies concerning inspection of facilities and equipment by local school authorities.	7	17	29.1	70.9
4. Protection of building construction students from exploitation.	6	18	25.0	75.0

* See glossary of terms and abbreviations, page xv

policies concerning the more regulatory connotations were considered by most of the respondents to be unimportant.

To summarize, information presented in this section revealed that respondents in the principal sample perceived operational factors to have varying degrees of importance on evaluating the utilization of high school building construction facilities. An examination of the cumulative frequencies based on frequency of important responses (as defined in the beginning of this section) by over 50 percent of the respondents indicates that 57.6 percent of the factors were rated as important to evaluating the utilization of facilities of this nature. These factors are summarized in Chapter V.

RESEARCH FINDINGS FROM THE BUILDING CONSTRUCTION TEACHER SAMPLE SURVEY

Data obtained from the questionnaires returned by members of the teacher sample were summarized in graphical and tabular form similar to the process used for summarizing findings from the principal sample.

This teacher sample consisted of all the building construction teachers who taught a course in building construction in comprehensive high schools of Alberta. While cumulative values of frequencies and percentages were included for responses where such data were considered of some value, the research findings were commonly reported as frequencies and percentages.

Similar to the research survey for the principal sample a six point value scale was used to provide a reasonably wide response range. For analyzing purposes, however, cumulative frequencies of significant influence (a summation of responses scaled 4 and 5) and insignificant influence (summation of responses scaled 0, 1, 2, and 3) were reported. Details are found in Appendix C, page 221.

The data presented under this topic involves the influence that building construction teachers perceive the factors under consideration to have on the utilization of building construction facilities.

Cumulative frequencies of significant responses based on the teachers' ratings of factors related to the influence on utilization of high school building construction facilities are listed in rank order in distribution Tables XII to XXI, inclusive. An examination of the tables indicates the relative importance that teachers of building construction in comprehensive high schools in Alberta assigned to each of the factors listed under specific operational activities. An analysis involving specific observations related to the tabulated information has implications for development of the micro model. Only those factors reported to be a significant influence (summation of responses scaled 4 and 5) by over 50 percent of the teacher sample were selected for construction of this model.

Administrative Factors

Summarized data pertaining to the influence of administrative factors are shown in Table XII. Almost all respondents (86.5 percent) indicated that the educational philosophy of the principal in relation to the vocational program had a significant influence on facilities utilization. An almost diametrically opposite view was taken by respondents to the factor involving evaluation procedures which the administrative staff uses to measure the achievement of organizational goals when 81.8 percent of the teachers indicated this factor to have an insignificant influence. One half of the factors were reported to have a significant influence on utilization by at least 50 percent of the building construction teachers.

Instructional Factors

Ratings summarized in Table XIII indicate the influence instructional factors are viewed by teachers to have on utilization of the facilities. Approximately 73 percent of the factors were judged by the majority of building construction teachers to have a significant influence on utilization. Only the grouping of students, student participation in planning learning activities, and student participation in extra-curricular activities were considered by most of these teachers to have an insignificant influence. An interesting observation should be made to the effect that factors considered important by the largest number of respondents were factors directly related to aspects involving the teacher while those rated unimportant by the majority of respondents involved student centered factors.

TABLE XII

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY ADMINISTRATIVE FACTORS

Administrative Factors	Responses			
	*f		*%	
	$*n_1$	$*n_2$	n_1	n_2
4. Educational philosophy of the principal in relation to the vocational program.	19	3	86.5	13.5
1. Leadership technique.	17	5	77.4	22.6
2. Decision-making procedures.	17	5	77.4	22.6
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes.	13	9	59.1	40.9
6. Organizing ability to fulfill educational goals.	12	10	54.6	45.4
10. The level of professional preparation of personnel appointed to administrative positions.	10	12	44.5	54.5
5. Administrative planning in the activities related to the building construction program.	8	14	36.4	63.6
3. Interstaff communication.	6	16	27.2	73.8
8. Success in coordinating school activities.	5	17	22.7	77.8
7. Evaluation procedures which the administrative staff uses to measure the achievement of organizational goals.	4	18	18.2	81.8

* See glossary of terms and abbreviations, page xv

TABLE XIII

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY INSTRUCTIONAL FACTORS

Instructional Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
9. Length of class periods.	20	2	91.0	9.0
8. Course scheduling.	20	2	90.9	9.1
1. The instructional methods used by the instructor.	18	4	81.9	18.1
3. The class size assigned to the instructor.	17	5	77.3	22.7
2. The instructional load (number of courses) of the instructor.	16	6	72.8	27.2
7. The adequacy of expendable instructional materials provided in the school.	14	8	63.7	36.3
4. The suitability of student work station arrangement.	12	10	54.6	45.4
5. The suitability of arrangement of job areas for specialized activities.	12	10	54.5	45.5
6. Grouping of students (i.e. homogeneously, heterogeneously, randomly).	8	14	36.3	63.7
10. Student participation in planning learning activities.	8	14	36.3	63.7
11. The effect of student participation in extra-curricular activities.	5	17	22.7	77.3

* See glossary of terms and abbreviations, page xv

Program Factors

There appeared to be no clear demarcation line between those factors which were considered by the building construction teachers to be significant or insignificant to the utilization of building construction facilities. Only program promotion by the school was perceived by a large group to have a significant influence on utilization. Table XIV summarizes these responses.

Staff Factors

Ratings summarized in Table XV appear to indicate that teacher competence in the program possesses a high degree of influence on the utilization of the facilities--95.4 percent of the respondents place this factor in this category. The availability of qualified instructors received a relatively high rating by 77.3 percent of the teachers. A teacher in-service training program was rated by most of the respondents as having a low influence on utilization.

Occupational Factors

Responses summarized on Table XVI show that almost all the occupational factors were considered as significant in their influence on utilization of facilities. Responses for the existence of other competitive occupational opportunities as an influential factor, either positively or negatively, were equally divided.

TABLE XIV

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY PROGRAM FACTORS

Program Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
5. Program promotion by the school.	19	3	86.3	13.7
4. The purpose of the course - whether it is used as an optional subject or for skill training purposes.	12	10	54.6	45.4
3. The credit value assigned to a specific building construction course.	11	11	50.0	50.0
9. The existence of other competitive educational opportunities.	11	11	50.0	50.0
7. Means of integrating other courses with the building construction program.	10	12	45.4	54.6
3. The rate of student drop-out at any specific level.	9	13	40.9	49.1
6. Availability of programs to all students (both boys and girls) having the required prerequisites.	9	13	40.9	59.1
8. The criteria which are used to evaluate student performance.	9	13	40.9	59.1
2. The entrance prerequisite of the program.	7	15	31.8	68.s

* See glossary of terms and abbreviations, page xv

TABLE XV

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY STAFF FACTORS

Staff Factors	Responses			
	*f		*%	
	$*n_1$	$*n_2$	n_1	n_2
1. Teacher competence in the program (based on knowledge of the subject and teaching ability).	21	1	95.4	4.6
8. The availability of qualified instructors.	17	5	77.3	22.7
3. Teacher participation in curriculum development.	13	9	59.1	40.9
6. Anticipated results of the program as perceived by the teacher.	12	10	54.6	45.4
7. Professional cooperation of the teacher with his colleagues.	12	10	54.5	45.4
5. Staff awareness of the nature of the building construction program.	11	11	50.0	50.0
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association.	10	12	45.4	54.6
4. A teacher in-service training program.	4	18	18.1	81.9

* See glossary of terms and abbreviations, page xv

TABLE XVI

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY OCCUPATIONAL FACTORS

Occupational Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
4. Student success in finding employment upon graduation from the building construction program.	16	6	72.7	27.3
1. Occupational opportunities for the student in the building construction program upon graduation.	15	7	68.2	31.8
3. Financial remuneration for graduates upon employment.	14	8	63.6	36.4
2. The significance industry places on training in building construction as a prerequisite for employment.	12	10	54.6	45.4
5. The existence of other competitive occupational opportunities.	11	11	50.0	50.0

* See glossary of terms and abbreviations, page xv

Community Factors

Most of the community factors were rated by respondents to be insignificant as an influence on utilizing instructional space for this program. Only factors involving the socio-economic environment of the individual student and parental encouragement for students to enrol in the building construction program were nominally representative of community factors which were perceived to influence utilization (Table XVII). Contrary to some speculation that the role which advisory board recommendations play in curriculum development influences utilization, teacher ratings indicated this factor to be of little influence on utilization.

Student Factors

Student attitude towards the building construction program was rated by approximately 91 percent of building construction teachers as having a high degree of influence on the utilization of facilities for this program. Other factors which were rated by the majority of teachers instructing in a building construction program as having an influence on utilization were: (1) the availability of guidance staff to assist in making a program choice, (5) student competence resulting from instruction, (7) general student achievement, (9) student aptitude, (10) student work habits and (12) opportunity given students to select this program based on his own interests. The financial resources of the student and student enrolment projections were rated as having little significance on utilization. Table XVIII summarizes these findings.

TABLE XVII

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY COMMUNITY FACTORS

Community Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
7. Parental encouragement for students to enrol in the building construction program.	12	19	54.6	45.4
1. The socio-economic environment of the individual student.	12	10	54.5	45.5
2. The industrial resources of the community.	9	13	40.9	59.1
3. The employability of the student in the immediate community.	9	13	40.9	59.1
6. Industrial community support in encouraging enrolment in the building construction program.	8	14	36.3	63.7
5. The standard of achievement which the industry sets for employment.	6	16	27.2	72.8
4. The role which advisory board recommendations play in curriculum development.	3	19	13.6	86.4

* See glossary of terms and abbreviations, page xv

TABLE XVIII

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY STUDENT FACTORS

Student Factors		Responses			
		*f		*%	
		*n_1	*n_2	n_1	n_2
11.	Student attitude towards the building construction program.	20	2	90.9	9.1
5.	Student competence resulting from instruction.	16	6	72.7	27.3
9.	Student aptitude.	15	7	68.2	31.8
1.	Availability of guidance staff to assist in making a program choice.	15	7	68.1	31.9
7.	General student achievement.	15	7	68.1	31.8
12.	Opportunity given students to select program based on their own interests.	15	7	68.1	31.9
8.	Mental ability of the student.	15	7	68.1	31.8
10.	Student work habits	14	8	63.6	36.4
3.	The apparent student capability in making a career choice at the high school level.	11	11	50.0	50.0
2.	The chronological age of the student.	7	15	31.8	68.2
4.	Student enrolment projections.	4	18	18.2	81.8
6.	Financial resources of the student.	4	18	18.2	81.8

* See glossary of terms and abbreviations, page xv

Facilities and Equipment Factors

Table XIX summarizes building construction teacher ratings pertaining to the influence that facilities and equipment factors have on the utilization of the selected facilities. The fact that percentage of responses seemed to agglomerate around the 50 percent point appeared to indicate some indecisiveness among the teacher sample as to whether or not facilities and equipment factors had an influence on utilization of facilities. Only the adequacy of size of the building (77.2 percent) and the availability of sufficient equipment for the building construction program (72.8 percent) were rated as factors which had a significant influence on facility utilization. Some general comfort factors were treated as significant toward influencing utilization. While ventilation in the room designated for the building construction program was a factor which respondents reported as equally significant and insignificant as an influence on the utilization of high school building construction facilities, 59.1 percent reported general lighting standards to influence utilization significantly. Although room temperature and provision of safety equipment has fewer responses (54.6 percent) in this category, these factors were included for micro model development.

Counselling Factors

Counselling factors are summarized by frequency of responses in Table XX. With one exception, all factors directed at the counselling of the student were rated by building construction

TABLE XIX

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY FACILITIES AND EQUIPMENT FACTORS

Facilities and Equipment Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
1. Adequacy of size of the building.	17	5	77.2	22.8
2. Availability of sufficient equipment for the building construction program.	16	6	72.8	27.2
3. General lighting standards.	13	9	59.1	40.9
5. Room temperature.	12	10	54.5	45.5
11. Provision of safety equipment.	12	10	54.5	45.5
6. Ventilation in the room designated for the building construction program.	11	11	50.0	50.0
12. Availability of first aid facilities.	10	12	45.5	54.5
4. Standard of auditory comfort.	9	13	40.9	59.1
7. Adequacy of plumbing facilities (wash area, glue area, etc.).	9	13	40.9	59.1
9. Adequacy of disposal system for waste material created in the building construction area (saw dust, cuttings, fluids, etc.).	9	13	40.9	59.1
13. Adequacy of fire protection.	9	13	40.9	59.1

TABLE XIX (continued)

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY FACILITIES AND EQUIPMENT FACTORS

Facilities and Equipment Factors	Responses			
	*f		*%	
	$*n_1$	$*n_2$	n_1	n_2
15. Interior design and decor of the building construction facility.	9	13	40.9	59.1
8. Availability and distribution of utility services. (Gas, water, electricity, compressed air, etc.)	8	14	36.4	63.6
16. Provision of security for projects, personal belonging, etc., in the designated area.	8	14	36.4	63.6
10. Proximity of vocational facilities to the academic instructional area.	8	14	36.3	63.6
14. Availability of building construction facilities and equipment to students outside the regular class time.	7	15	31.8	68.2

* See glossary of terms and abbreviations, page xv

TABLE XX

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY COUNSELLING FACTORS

Counselling Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
3. Adequacy of student selection procedures for entrance into the building construction program.	13	9	59.1	40.9
5. The source where recommendations to the student to enrol in a program usually originate.	10	12	45.4	54.6
2. Accessability of job opportunity information to students.	9	13	40.9	59.1
4. The source where recommendation to provide specific programs in the school usually originate.	5	17	22.7	77.3
1. Availability of student records.	3	19	13.6	86.3

* See glossary of terms and abbreviations, page xv

teacher respondents as factors which had an insignificant influence on the utilization of building construction space. The exception was the factor involving an adequacy of student selection procedures for entrance into the building construction program to which 59.1 percent of the teachers responded with a favourable rating. It is interesting to note in this regard that this was the only factor which would provide student access to the counsellor.

Policies Factors

A summary of responses to policies factors is shown in Table XXI. Respondents' perceptions of the selected items as factors which have a positive influence on building construction facilities utilization varied considerably. This variation had a neutralizing effect on the selection of factors which influence the use of space since no polarization of responses for any one item could be identified. Only two factors were reported to have a significant influence on utilization of the selected facilities. These factors involved materials purchasing policies and the definition of policies concerning activities related to the building construction program which were given this rating by 59.1 percent and 54.6 percent of the teachers, respectively. The factor pertaining to policies concerning inspection of facilities and equipment by local school authorities was heavily slanted toward an insignificant rating by 95.5 percent of the respondents. Factors involving policies of a regulatory nature were considered

TABLE XXI

DISTRIBUTION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY POLICIES FACTORS

Policies Factors	Responses			
	*f		*%	
	*n_1	*n_2	n_1	n_2
7. Materials purchasing policies.	13	9	59.1	40.9
1. The defninition of policies concerning activities related to the building construction program (i.e. work experience, industrial tours, etc.).	12	10	54.6	45.4
9. Policies concerning educational success standards for the building construction program.	11	11	50.0	50.0
8. Policies concerning equipment replacement.	10	12	45.5	54.5
3. Protection of building construction staff from exploitation by individuals in the school and agencies of the community.	9	13	40.9	59.1
5. The extent to which regulations concerning the building construction area are adhered to by all staff members.	8	14	36.3	63.7
2. The procedures used in formulating policies for the school.	7	15	31.8	68.2
4. Protection of building construction students from exploitation.	7	15	31.8	68.2
6. Policies concerning inspection of facilities and equipment by local school authorities.	1	21	4.5	95.5

* See glossary of terms and abbreviations, page xv

by most of the respondents to be insignificant to influencing utilization of high school building construction facilities.

To summarize, information presented in this section revealed that respondents in the teacher sample perceived operational factors to have varying degrees of influence on the utilization of facilities provided for the high school building construction program. An examination of the cumulative frequencies based on frequency of significant influence responses (as defined in the beginning of this section) by over 50 percent of the respondents indicates that 44.6 percent of the factors were rated as factors which influence the utilization of high school building construction facilities.

Information which generally describes the operational factors as they reportedly exist (Part 2 of the building construction teacher survey) in the participating high schools of Alberta is tabulated in Appendix D, page 224. No attempt has been made in this study to relate this information to the frequency of responses which were summarized in this chapter. It is anticipated, however, that an examination of the common responses which appear in this appendix might aid in developing criteria for self-evaluation purposes if assessed in terms of the findings presented in this research.

CHAPTER V

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

SUMMARY

Information involving assessment criteria for evaluating the utilization of comprehensive high school building construction facilities resultant from this study is presented in this summary. Data presented in Chapter IV were used to identify the operational factors for inclusion in the macro and micro models and subsequently synthesized into a model for the evaluation of utilization of comprehensive high school building construction facilities.

Similar survey instruments were used to collect the data for both the macro and micro models. The directives for completion of the instruments and the samples used for collecting the data for these models, however, differed. To obtain the data used to construct the macro model a sample of principals from comprehensive high schools in the Province of Alberta where a building construction program was taught rated selected factors, relative to the school's operation, to identify the factors which are important to evaluating the utilization of building construction facilities in these schools. To obtain the data used to construct the micro model a sample of building construction teachers from

the same schools rated identical factors to identify those factors which play a significant role in influencing the utilization of high school building construction facilities.

In addition, a search of the related literature identified components relative to the evaluation process which was a significant dimension in developing the micro, macro and utilization models.

A third dimension which was significant in the development of the utilization model was identified from a search of the related literature as the procedure of evaluation.

The summary below contains information which was used for the development of the macro, micro and utilization models presented in the next section of this chapter.

Factors Important to Evaluating the Utilization of High School Building Construction Facilities

A summary of the factors important to evaluating the utilization of building construction facilities as rated by the principal respondents is presented graphically in Figure 5.

Although the distribution of responses varied considerably from one factor to another, there was some evidence that principals considered certain factors of more importance to such an evaluation than others. For the purpose of this study only those factors to which more than 50 percent of the respondents assigned a value of 4 or 5 were considered to be important factors in evaluating the utilization of high school building construction

DISTRIBUTION OF FACTORS RATED IMPORTANT -

UNIMPORTANT BY OPERATIONAL DIMENSIONS

Cumulative Frequency - Percent

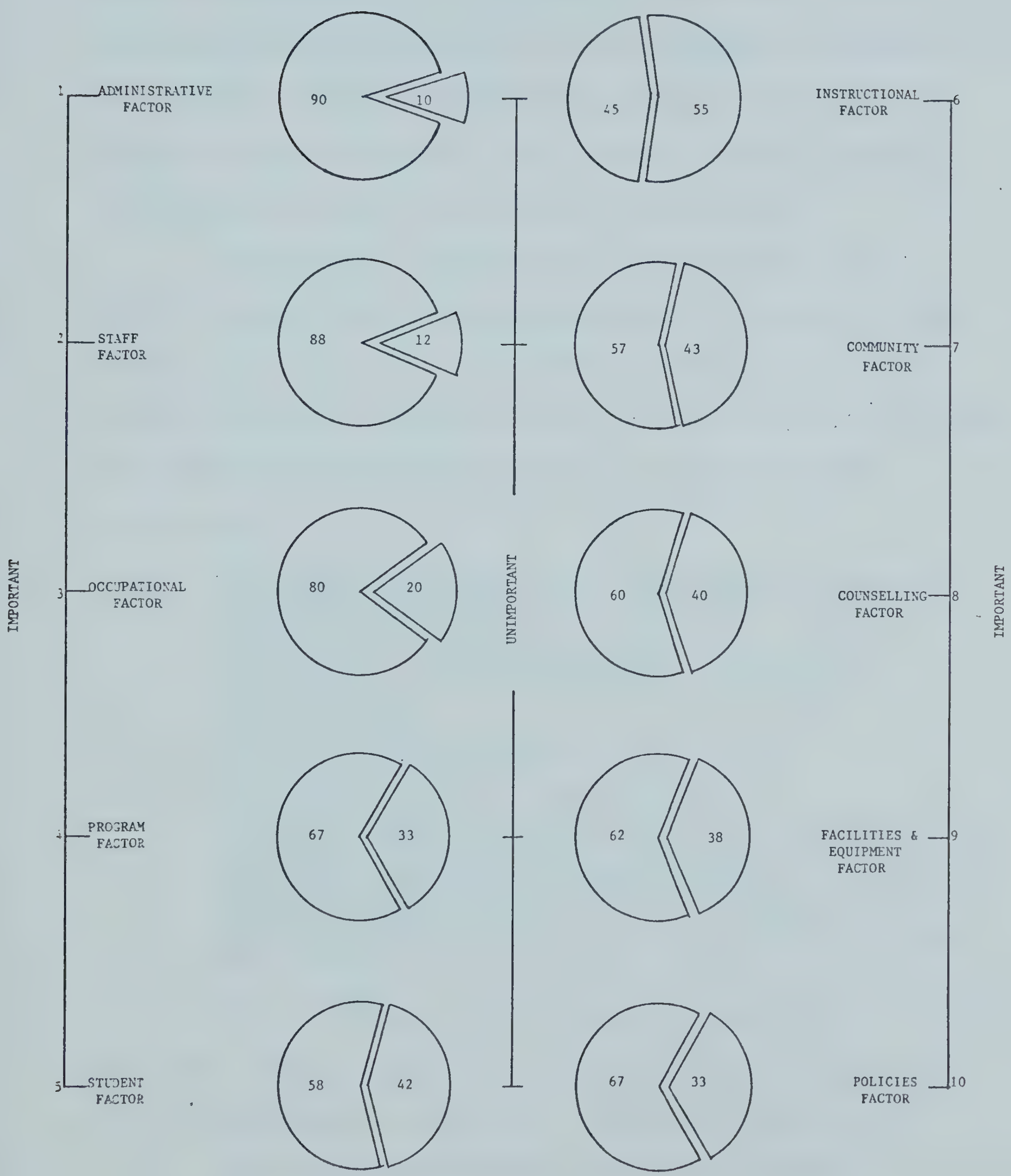


Figure 5

facilities. The factors which respondents rated as important to such an evaluation are listed in rank order below. Shown in parentheses after each statement is the percentage of respondents who rated the statement as important. When the percentages for two factors were equal, the factor with the greatest number of responses rating that factor highest was listed first.

Specifically with reference to the principal sample response analysis as illustrated graphically in Figure 5, 90 percent of the factors in the administrative dimension were rated on this basis to be important factors in evaluating the utilization of building construction facilities. In rank order these factors were:

4. Educational philosophy of the principal in relation to the vocational program. (87.5 percent)
5. Administrative planning in the activities related to the building construction program. (70.8 percent)
6. Organizing ability to fulfill educational goals. (70.8 percent)
2. Decision-making procedures. (62.5 percent)
3. Interstaff communication. (62.5 percent)
1. Leadership technique. (58.3 percent)
8. Success in coordinating school activities. (58.3 percent)
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes. (54.2 percent)
7. Evaluation procedures which the administrative staff uses to measure the achievement of organizational goals. (54.2 percent)

With reference to the instructional activities, data from Table III, page 85 , show that of the 12 factors listed, six were rated as important to evaluation. In rank order these were:

1. The instructional methods used by the instructor. (83.4 percent)
3. The class size assigned to the instructor. (75 percent)
4. The suitability of work station arrangement. (66.7 percent)

8. Course scheduling. (62.5 percent)
5. The suitability of arrangement of job areas for specialized activities. (62.5 percent)
2. The instructional load (number of courses) of the instructor. (62.5 percent)

Two thirds of the factors associated with program activities, Table IV, page 87 , were selected by the principals as important to evaluating the utilization of building construction facilities. These were ranked as follows:

4. The purpose of the course--whether it is used as an optional subject or for skill training purposes. (75.0 percent)
8. The criteria which are used to evaluate student performance. (70.8 percent)
5. Program promotion by the school. (66.7 percent)
6. Availability of programs to all students (both boys and girls) having the required prerequisites. (66.7 percent)
7. Means of integrating other courses with the building construction program. (62.5 percent)
1. The credit value assigned to a specific building construction course. (54.2 percent)

Of the eight staff functions the principals were asked to rate, they rated seven as important factors for an evaluation instrument. The factors rated most important were:

1. Teacher competence in the program (based on knowledge of of subject and teaching ability). (95.8 percent)
6. Anticipated results of the program as perceived by the teacher. (87.5 percent)
8. The availability of qualified instructors. (79.2 percent)
7. Professional cooperation of the teacher with his colleagues. (75.0 percent)
3. Teacher participation in curriculum development. (75.0 percent)
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association. (62.5 percent)
5. Staff awareness of the nature of the building construction program. (62.5 percent)

Raw data from Table VI, page 90 , indicate that 80.0 percent of the factors related to occupational factors were perceived by respondents of the principal sample as important for evaluating the utilization of facilities provided for a building construction program. In rank order these occupational factors were:

1. Occupational opportunities for the student in the building construction program upon graduation. (91.6 percent)
4. Student success in finding employment upon graduation from the building construction program. (79.2 percent)
2. The significance industry places on training in building construction as a prerequisite for employment. (75.0 percent)
5. The existence of other competitive occupational opportunities. (58.4 percent)

Raw data in Table VII, page 91 , shows that participants in the principal sample rated community factors as unimportant to an evaluation of this nature. Less than half (43 percent) of the factors listed in the survey instrument were considered of any significance. Of the three rated important only one factor received a rating to indicate that it was of high significance (79.2 percent). In rank order these are listed as follows:

7. Parental encouragement for students to enrol in the building construction program. (79.2 percent)
2. The industrial resources of the community. (54.2 percent)
3. The employability of the student in the immediate community. (54.2 percent)

From an analysis of raw data in Table VIII, page 93 , student factors were rated as an important dimension for the model to be used for the evaluation of utilization of building

construction facilities. Of the twelve factors listed seven were rated as important by more than 50 percent of the respondents. In rank order these were:

12. Opportunity given students to select program based on their own interests. (91.6 percent)
11. Student attitude towards the building construction program. (87.5 percent)
9. Student aptitude. (79.2 percent)
10. Student work habits. (75.0 percent)
1. Availability of guidance staff to assist in making a program choice. (75.0 percent)
5. Student competence resulting from instruction. (66.6 percent)
3. The apparent student capability in making a career choice at the high school level. (54.2 percent)

Contrary to speculation,principals who participated in the study rated activities related to facilities and equipment factors as one of the least important for evaluating utilization of building construction facilities. Of the 16 factors listed on the research instrument only 6 were rated by more than 50 percent of the principals to be important. Again, in rank order these factors were:

2. Availability of sufficient equipment for the building construction program. (75.0 percent)
11. Provision of safety equipment. (70.8 percent)
12. Availability of first aid facilities. (66.7 percent)
13. Adequacy of fire protection. (66.7 percent)
3. General lighting standards. (66.7 percent)
1. Adequacy of size of the building. (62.5 percent)

A comparison of raw data from Table X, page 97 , and the graph on page 120 indicated that 40 percent of the factors related to the counselling functions were rated by respondents of the principal sample to be important to evaluating utilization of building construction facilities. The factors with the greatest frequency of important responses were:

2. Accessability of job opportunity information to students. (75.0 percent)
3. Adequacy of student selection procedures for entrance into the building construction program. (54.2 percent)

The policies dimension was not considered by respondents to be important for purposes of evaluating utilization of the industrial-vocational education facilities as related to building construction. While one third of the 9 listed factors were selected by respondents as possessing some measure of importance only item number 8 had any significant rating of importance.

8. Policies concerning equipment replacement. (70.9 percent)
7. Materials purchasing policies. (58.4 percent)
9. Policies concerning educational success standards for the building construction program. (58.4 percent)

To summarize briefly, the raw data presented in Tables II to XI, Chapter IV, identifies the factor in each operational dimension which was rated by most of the respondents to be important to evaluating the utilization of high school building construction facilities to be as follows:

a. Educational philosophy of the principal.
b. Instructional methods.
c. Purpose of the course.
d. Teacher competence.
e. Occupational opportunities.
f. Parental encouragement.
g. Student's program selection opportunities.
h. Availability of equipment.
i. Accessibility of job opportunity information.
j. Equipment replacement policies.

Of the principals who responded to the survey instrument between 79 and 100 percent indicated the following factors to be important for the evaluation of utilization of building construction facilities. In rank order these factors were:

a. Teacher competence.
b. Student opportunities to select their program.
c. Occupational opportunities.
d. Educational philosophy of the principal.
e. Student attitude towards the program.
f. Anticipated results of the program as perceived by the teacher.
g. The instructional methods used by the teacher.
h. Availability of qualified instructors.
i. Parental encouragement.
j. Student aptitude.
k. Student success in finding employment upon graduation.

Factors That Have A Significant Influence on Utilization of High School Building Construction Facilities

The building construction teachers' perception of the factors which influence the utilization of high school building construction facilities is presented graphically in Figure 6. As noted, the distribution of responses varies considerably from one factor to another. Some commonality of opinion, however, is evident that certain factors are perceived to be more significant in influence on utilization than others. In analyzing the data obtained for this study those factors to which more than 50 percent of the teacher participants assigned a value of not less than 4 were considered to be a significant influence on the utilization of facilities provided for the high school building construction program. The factors which respondents rated as a significant influence on utilization are listed in rank order below. Shown in parenthesis after each statement is the percentage of respondents who rated the statement as a significant influence. When the percentages for two factors were equal, the factor with the greatest number of responses rating the factor highest was listed first.

DISTRIBUTION OF FACTORS RATED SIGNIFICANT

INFLUENCE - INSIGNIFICANT INFLUENCE BY

OPERATIONAL DIMENSIONS

Cumulative Frequency - Percent

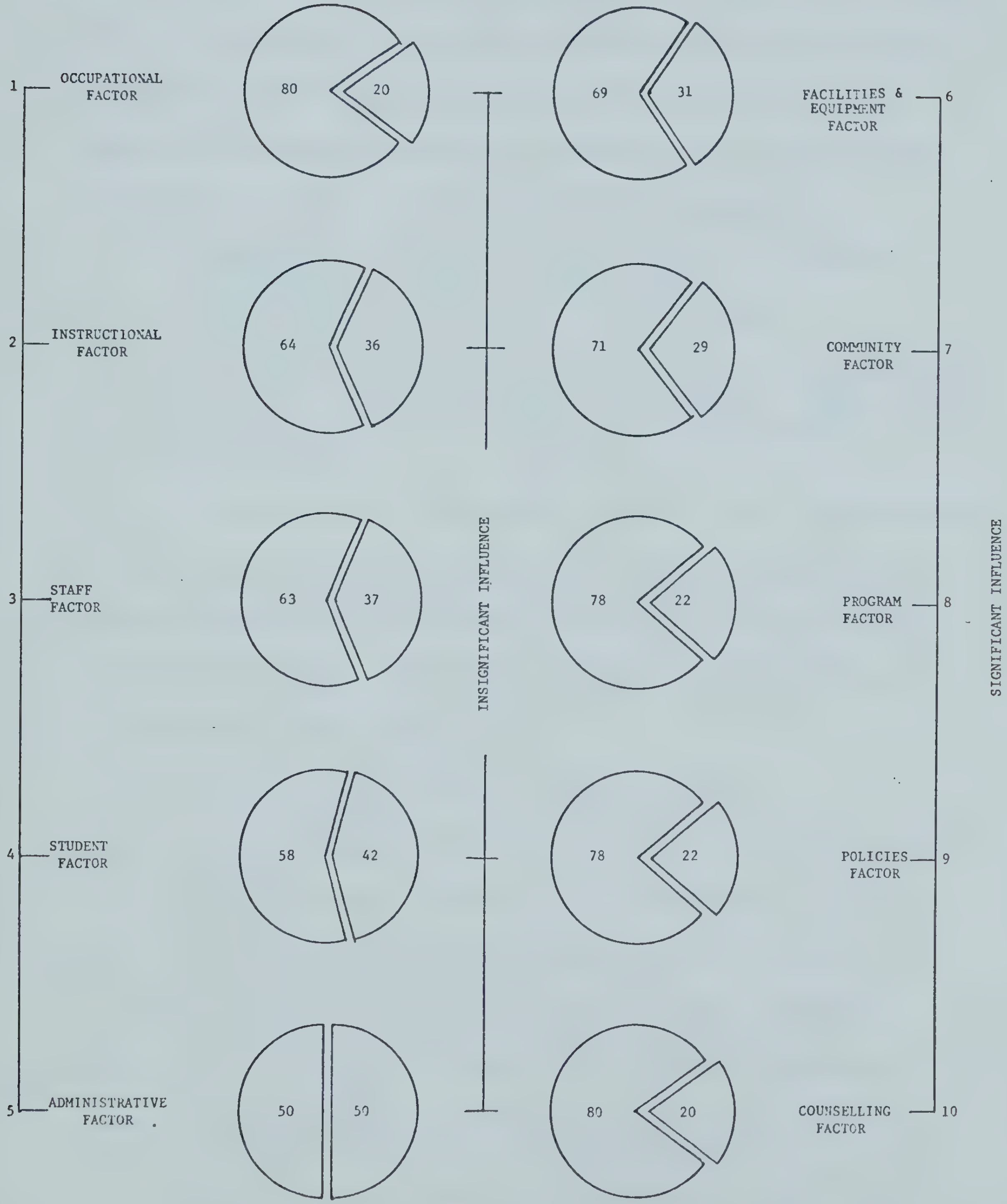


Figure 6

Teacher participants rated 50 percent of the administrative factors as having a significant influence for evaluating the utilization of facilities for building construction programs. Raw data in Table XII show that of the 10 factors that building construction teachers were asked to react to, only 4 were rated above the 50 percent cut-off point. These factors were:

4. Educational philosophy of the principal in relation to the vocational program. (86.5 percent)
2. Decision-making procedures. (77.4 percent)
1. Leadership technique. (77.4 percent)
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes. (59.1 percent)
6. Organizing ability to fulfill educational goals. (54.6 percent)

From raw data in Table XIII, page 103, most factors were rated as having a significant influence on the utilization of building construction facilities. Of the 11 factors listed, 8 were rated as having a significant influence by over 50 percent of respondents. These were:

9. Length of class periods. (91.0 percent)
8. Course scheduling. (90.9 percent)
1. The instructional methods used by the instructor. (81.9 percent)
3. The class size assigned to the instructor. (77.3 percent)
2. The instructional load (number of courses) of the instructor. (72.8 percent)
7. The adequacy of expendable instructional materials provided in the school. (63.7 percent)
4. The suitability of student work station arrangement. (54.6 percent)
5. The suitability of arrangement of job areas for specialized activities. (54.5 percent)

Program factors were generally rated by teacher participants to have an insignificant influence on the utilization

of high school building construction facilities. Table XIV, page 105, shows that of the 9 factors listed only 2 were rated as having a significant influence on the utilization of building construction facilities provided for the high school program. In rank order these were:

5. Program promotion by the school. (86.3 percent)
4. The purpose of the course, whether it is used as an optional subject or for skill training purposes. (54.6 percent)

Of the eight staff factors, Table XV, page 106, teachers were asked to rate, they rated 5 as factors having a significant influence on the utilization of building construction facilities. The factors rated most significant were:

1. Teacher competence in the program (based on knowledge of the subject and teaching ability). (95.4 percent)
8. The availability of qualified instructors. (77.3 percent)
3. Teacher participation in curriculum development. (59.1 percent)
6. Anticipated results of the program as perceived by the teacher. (54.6 percent)
7. Professional cooperation of the teacher with his colleagues. (54.5 percent)

With reference to the occupational activities, data from Table XVI, page 107, show that of the 5 factors listed 4 were rated as having a significant influence on utilization of high school building construction facilities. In rank order these were:

4. Student success in finding employment upon graduation from the building construction program. (72.7 percent)
1. Occupational opportunities for the student in the building construction program upon graduation. (68.2 percent)

3. Financial remuneration for graduates upon employment. (63.6 percent)
2. The significance industry places on training in building construction as a prerequisite for employment. (54.6 percent)

Data presented in Table XVII, page 109, show that only 2 of the 7 factors listed as community factors were rated by teacher participants to have a significant influence on the utilization of building construction facilities. These factors were:

7. Parental encouragement for students to enrol in the building construction program. (54.6 percent)
1. The socio-economic environment of the individual student. (54.5 percent)

A comparison of the raw data tabulated in Table XVIII, page 110, indicates that of the 12 factors that teachers were asked to react to, 8 were rated as factors that had a significant influence on the utilization of building construction facilities. These factors are listed below:

11. Student attitude towards the building construction program. (90.9 percent)
5. Student competence resulting from instruction. (72.7 percent)
9. Student aptitude. (68.2 percent)
12. Opportunity given students to select program based on their own interests. (68.1 percent)
7. General student achievement. (68.1 percent)
1. Availability of guidance staff to assist in making a program choice. (68.1 percent)
8. Mental ability of the student. (68.1 percent)
10. Student work habits. (63.6 percent)

Raw data compiled in Table XIX, page 112, reveals that 5 of the 16 factors listed in the facilities and equipment dimension were rated by participants from the teacher sample as having an influence which was significant to the utilization of the facilities investigated. These factors are listed below:

1. Adequacy of size of the building. (77.2 percent)
2. Availability of sufficient equipment for the building construction program. (72.8 percent)
3. General lighting standards. (59.1 percent)
11. Provision of safety equipment. (54.5 percent)
5. Room temperature. (54.5 percent)

Of the 5 factors listed in Table XX, page 114, only one of the factors was rated by the sample of teachers to have some influence on the utilization of building construction facilities. This factor is listed below:

3. Adequacy of student selection procedures for entrance into the building construction program. (59.1 percent)

Data presented in Table XXI, page 116, show that only two of the 9 factors listed were rated by teacher respondents as having an influence on the utilization of facilities for building construction. These factors were:

7. Materials purchasing policies. (59.1 percent)
1. The definition of policies concerning activities related to the building construction program. (54.6 percent)

This summary of the raw data presented in Tables XII to XXI, Chapter IV identifies the factor in each operational dimension which was rated by most of the respondents to have a significant influence on the utilization of high school building construction facilities to be as follows:

a. Educational philosophy of the principal.
b. Length of class period.
c. Program promotion by the school.
d. Teacher competence.
e. Student success in finding employment upon graduation.
f. Parental encouragement.
g. Student attitude.
h. Adequacy of size of the building.
i. Adequacy of student selection procedures.
j. Materials purchasing policies.

Of the teachers who responded to the survey instrument between 79 and 100 percent indicated the following factors to be a significant influence on utilization of high school building construction space. In rank order these were:

a. Teacher competence
b. Length of class periods
c. Student attitude towards the program
d. Course scheduling
e. Educational philosophy of the principal
f. Program promotion by the school
g. The instructional methods used by the teacher

Components of Evaluation Used For Model Development

Among the models which were given special attention in this research were the Evaluation Program for Innovative Curriculum (EPIC) Model, the Clark-Guba Model for Educational Change, the Pittsburgh Discrepancy Evaluation Model, and the Context, Input, Process, Product (CIPP) Evaluation Model. Following an in-depth library research of the professional literature dealing with these models, Stufflebeam's CIPP Model was selected as the model which was most relevant and adaptable to this study. The components of this model, therefore, were used for the evaluation dimension of the macro, micro and utilization models presented in the next section. Briefly, the components consist of (1) context evaluation which defines environmental elements of evaluation, (2) input evaluation which defines the human and material resources elements of the evaluation, (3) process evaluation which monitors the evaluation process, and (4) product evaluation which determines the effectiveness of the project.

Evaluation Procedure Used in the Utilization Model

In conducting a library research to identify an evaluation design which would provide the necessary elements that could be used to construct a model for evaluating the utilization of facilities provided for industrial-vocational facilities, research articles presented by various scholars who have made contributions in the field of evaluation were carefully examined. Since Stufflebeam's design is a system for implementing evaluations in a variety of situations and is applicable to analyzing the component parts of the evaluation dimension, it was selected for the implementation dimension of the utilization model constructed in the next section of this chapter. Briefly, this design includes the following elements: (1) focusing the evaluation, (2) collection of information, (3) organization of information, (4) analysis of information, (5) reporting of information, and (6) administration of evaluation.

IMPLICATIONS

The primary objective of this study was to develop a model that might be used to evaluate the utilization of facilities provided for secondary school industrial-vocational programs. In developing such a model, the approach was to examine the findings presented by authorities in the field of evaluation and to expand on relevant information to develop a design which may be applied to a utilization evaluation.

An examination of the work of scholars on the subject of evaluation indicates that the evaluation dimension is composed primarily of context, input, process, and product elements. Operational dimensions of the school are identified as administrative, instructional, program, staff, occupational, community, student, facilities and equipment, counselling, and policies factors.

Data and analyses of previous chapters have identified the components of the evaluation dimension (page 54) and the operational dimension (Appendix A, page 159). The interaction of the two dimensions as they relate to the importance in evaluating utilization and the influence on utilization was presented in the form of a macro and micro model and a synthesis of the two was developed into an Evaluation of Utilization Model (EUM).

The Macro Model

To illustrate how the forces that affect the evaluation of utilization (operational dimension) interact with components of the evaluation dimension, a model referred to in this study as the macro model is presented as Figure 7. An examination of this model reveals that it consists of three dimensions, the combination of which produces a cube of variables consisting of components of evaluation, operational factors, and the importance to an evaluation of utilization ratings.

The components of evaluation dimension is that dimension which contains the type of evaluation which the variables of the two dimensions may be subjected to. The first of these variables

MACRO MODEL

EVALUATION OF UTILIZATION

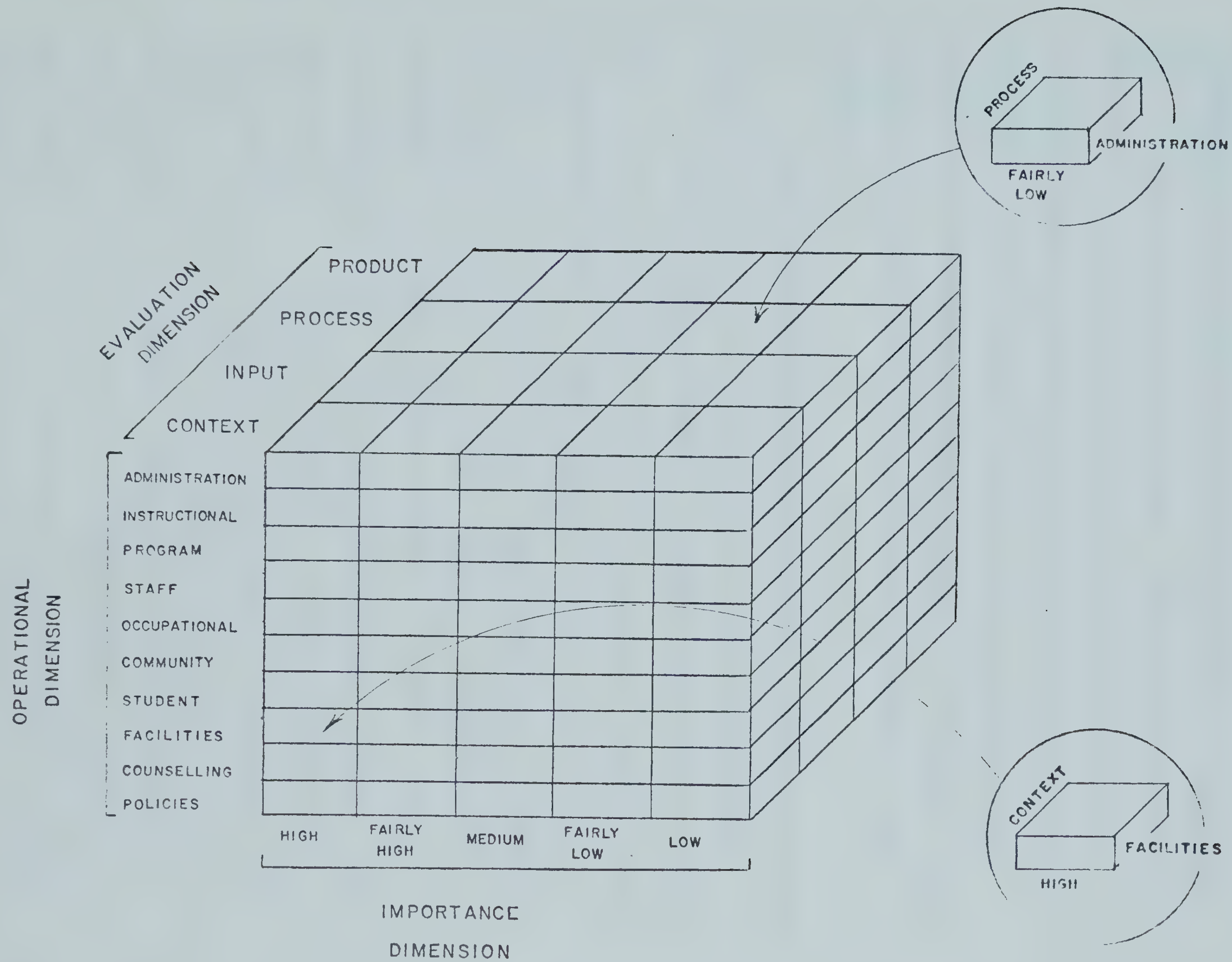


Figure 7

is context which is defined as the matrix in which environmental elements associated with the subject of evaluation are examined. The second variable is that of input. Input, in this matrix, is defined as that dimension which includes elements involving human and material resources to be assessed in the evaluation. The third variable is that of process which is defined as the matrix which monitors the evaluation process. The fourth variable is that of product which determines the effectiveness of the project.

The variables defined above represent important categories which were selected for the evaluation of utilization models.

The operational dimension is that dimension of the model defined by the variables of administrative factors, staff factors, occupational factors, program factors, student factors, instructional factors, community factors, counselling factors, facilities and equipment factors, and policies factors. The specific factors included in this model are those listed in the first section of the summary, page 119. Each of the variables may or may not interact with each of the other variables to produce factors which are important to an evaluation of utilization of facilities. For example, if an interaction occurs among three variables such as an administrative factor which is subject to a process evaluation, but in the importance dimension is rated fairly low, this factor would likely be of little significance in the evaluation process. On the other hand, a situation where variables such as a

facilities factor is subject to a context evaluation is rated high would produce a factor representing an important criterion for evaluation.

Information obtained in Chapter IV and summarized in the first section of this chapter (page 119) lists the factors related to the operational dimensions which were perceived by participants from the principal sample to be of significant importance to an evaluation of high school building construction facilities. For evaluative purposes their interaction with the appropriate evaluation dimensions is significant to evaluation.

The Micro Model

An illustration indicating the forces that influence the utilization of high school building construction facilities is presented as Figure 8. Similar to the macro model variables on three dimensions interact within a cube of numerous combinations of variables and produce factors that are significant to a facilities utilization evaluation.

The evaluation dimension and the operational dimension are identical to those used in the macro model. The third dimension, however, is changed. Components of evaluation and the operational factors interact with a new variable, the influence dimension. Together the variables in each dimension provide the evaluation criteria indicative of factors which influence utilization. By way of explanation, if a small cube is withdrawn from the model with multivariate combinations of factors, the interaction among

UTILIZATION

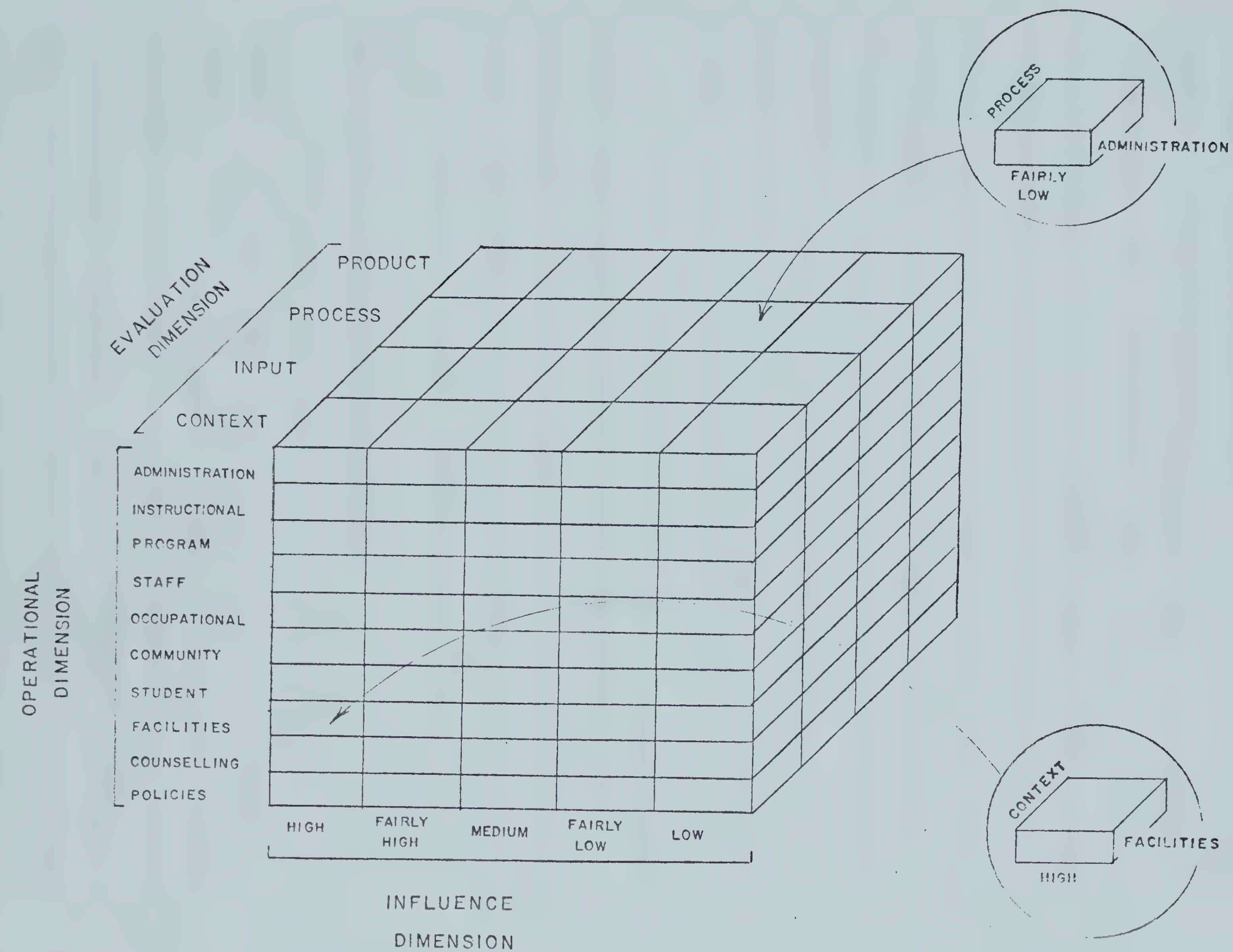


Figure 8

the three variables associated with the smaller cube will determine the significance of the operational factor in a specified type of evaluation. Specifically, with reference to Figure 8, if the interaction among three variables involved a facilities factor to be subjected to a context evaluation and was rated as having a high degree of influence on utilization, this combination would suggest a combination of significance to a utilization evaluation. Similarly, the interaction combination involving an administrative factor of fairly low influence subjected to a process evaluation would likely be a questionable factor for inclusion in evaluating utilization of facilities.

The analyzed data obtained in Chapter IV and summarized in the second section (page 126) of this chapter lists the factors related to the operational dimensions which were perceived by the teacher sample to be a significant influence on the utilization of high school building construction facilities.

The Evaluation of Utilization Model (EUM)

Conceptually, this study is based on the theory of evaluation with specific reference to Stufflebeam's evaluation design. In developing the macro and micro models, three variable dimensions were examined in each model. The macro model contained the dimensions of evaluation, operational factors, and importance, while the micro model included both the evaluation and operational dimensions, but the importance dimension was replaced by an influence dimension.

As shown in the discussion of the macro and micro models, each one of the operational factors interact with the components of the other two dimensions to produce a resulting factor which may or may not be significant to evaluating utilization of facilities. When all the factors of the operational dimension interact with the elements of the importance dimension, using the data obtained in the previous chapter, and then are associated with the appropriate component of evaluation as determined by the specific educational system, an importance rating involving a specific type of evaluation has been achieved. In addition, when all the factors of the operational dimension interacted with the elements of the influence dimension, using the data obtained, and are associated with the appropriate component of evaluation, a utilization influence rating related to a specific type of evaluation has been determined. By superimposing the macro model on the micro model, a one to one relationship of importance and influence would develop if identical factors rated equally by importance and influence interact with a common component of evaluation. Such a relationship would represent a significant association among dimensions to isolate factors which are representative of the determinents of utilization. Consequently, by subjecting these factors, cumulatively, to the interacting evaluation component, conditions for maximum utilization may be achieved.

The process of determining the dimensions used in both the macro and micro models was described in previous chapters of

this study. By analysis of data provided by the principal and teacher samples, the type of interaction between dimensional elements of the various cells of the cube was determined for both the macro and micro models. When the two were synthesized it became evident that some polarity developed between cells of the macro model and some of those in the micro model. Since only the factors in the high and fairly high dimensions of importance and influence were selected as elements which had a degree of significance to evaluating utilization, no further analysis of elements in the lower categories was made.

Commonalities between factors important to evaluating utilization and factors which have a significant influence on utilization are evident immediately when an inspection of the graphical illustrations presented in Figures 9 to 18 is made. By way of explanation, the bars with horizontal lines represent principal responses to factors analyzed as important in Chapter IV. Bars with crossing oblique lines represent teacher responses to factors analyzed in the same chapter to be of greatest influence on utilization. In the procedure of synthesizing the two models, for example, factor number 4 in the administrative dimension--the educational philosophy of the principal--occupies the cells designated high or fairly high in both the micro and macro models.

A further visual examination of all the graphs will show other commonalities of ratings in both dimensions which exert a synthesizing effect on the components of the macro and micro models.

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND
"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY ADMINISTRATIVE FACTORS

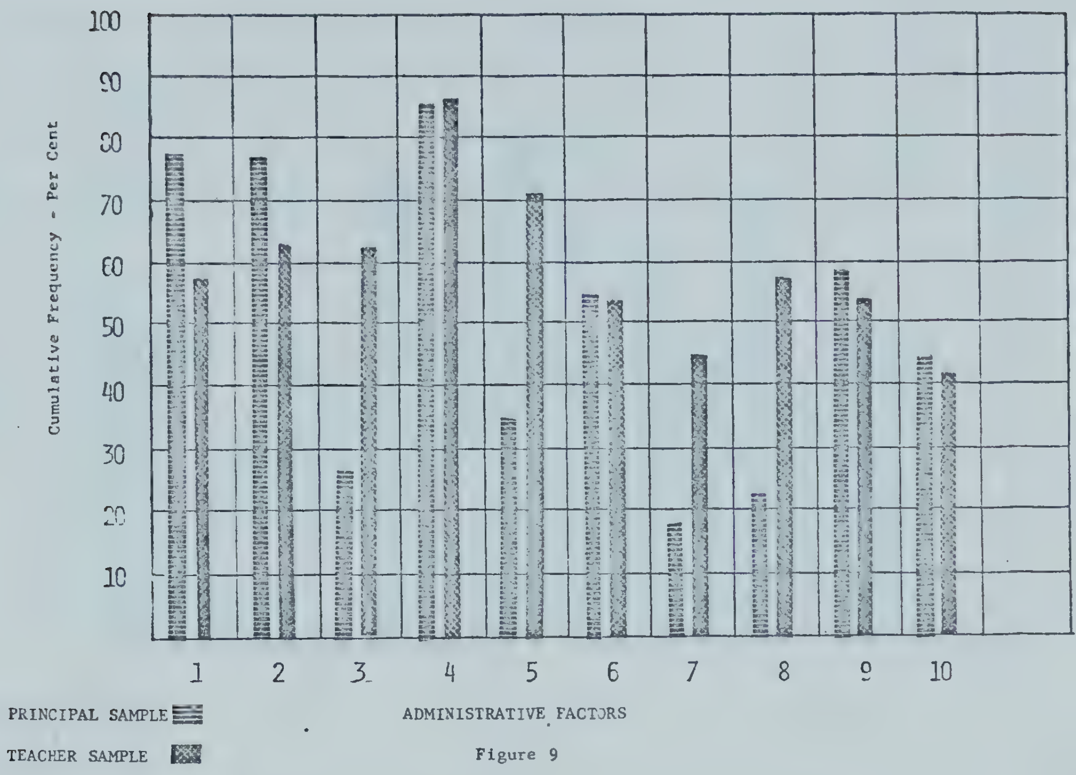


Figure 9

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND
"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY INSTRUCTIONAL FACTORS

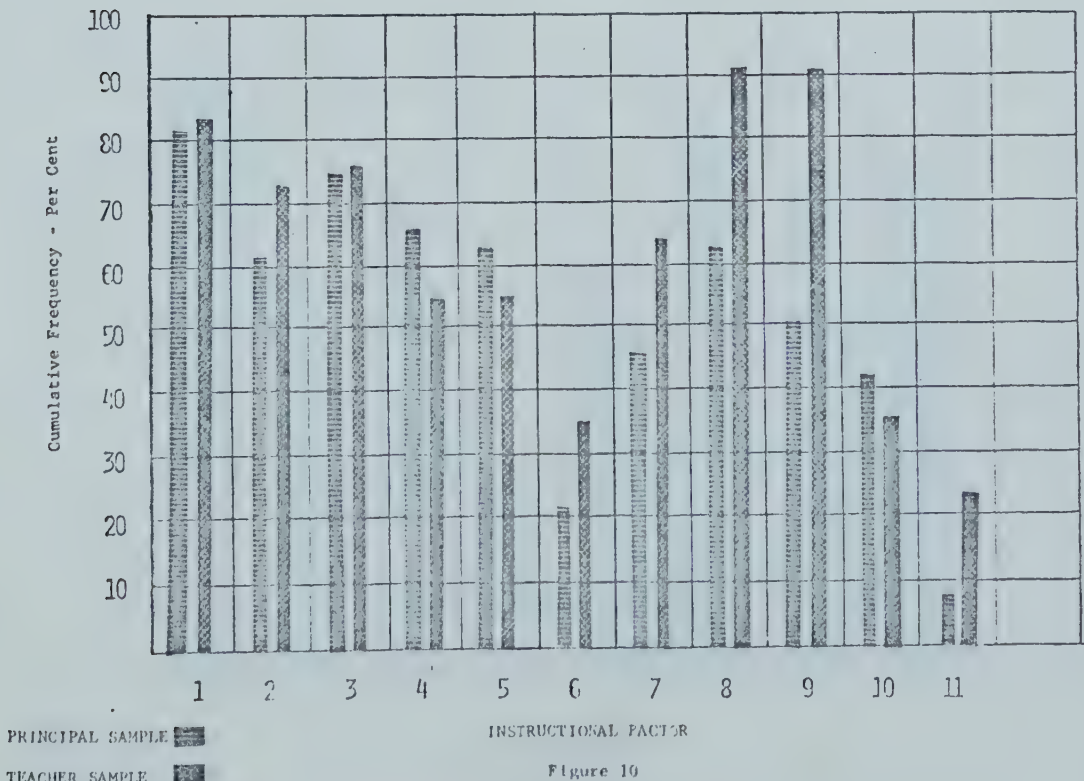


Figure 10

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY PROGRAM FACTORS

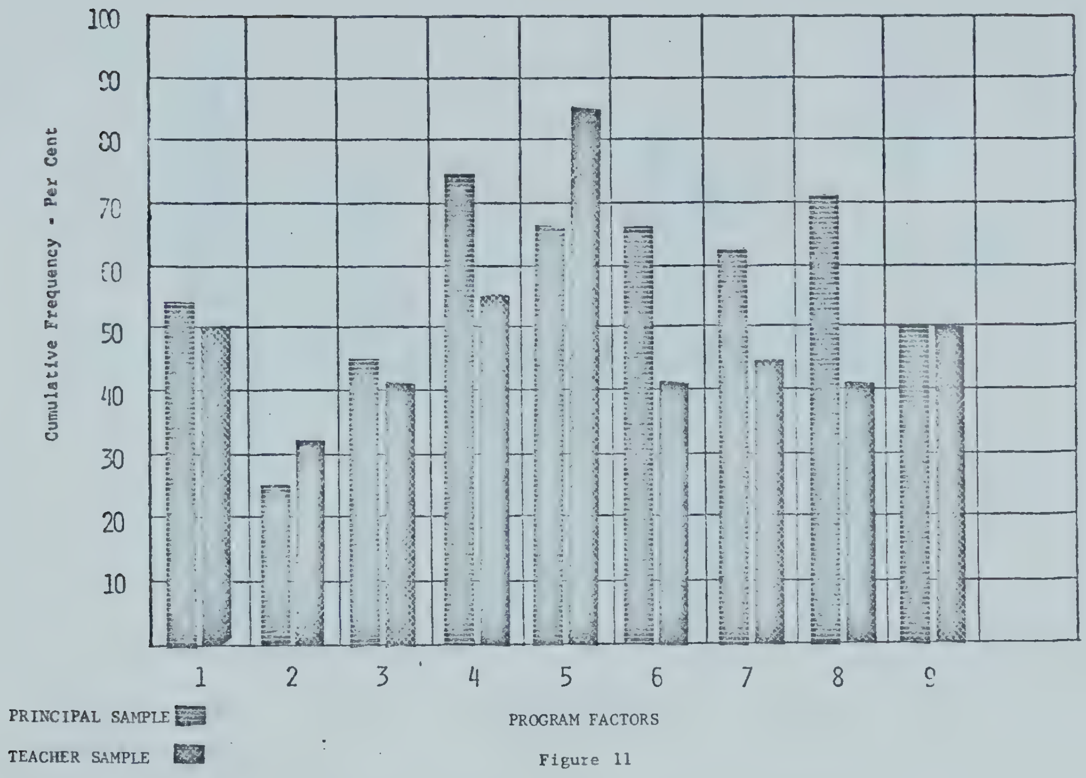


Figure 11

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY STAFF FACTORS

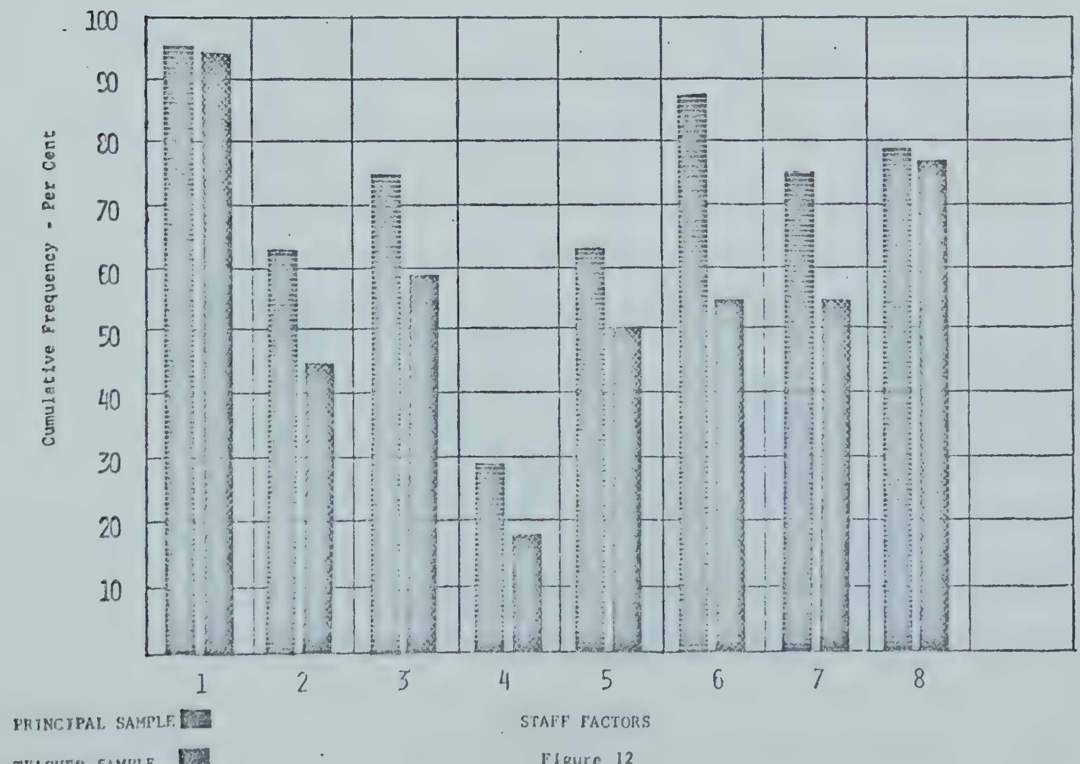


Figure 12

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND "SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY OCCUPATIONAL FACTORS

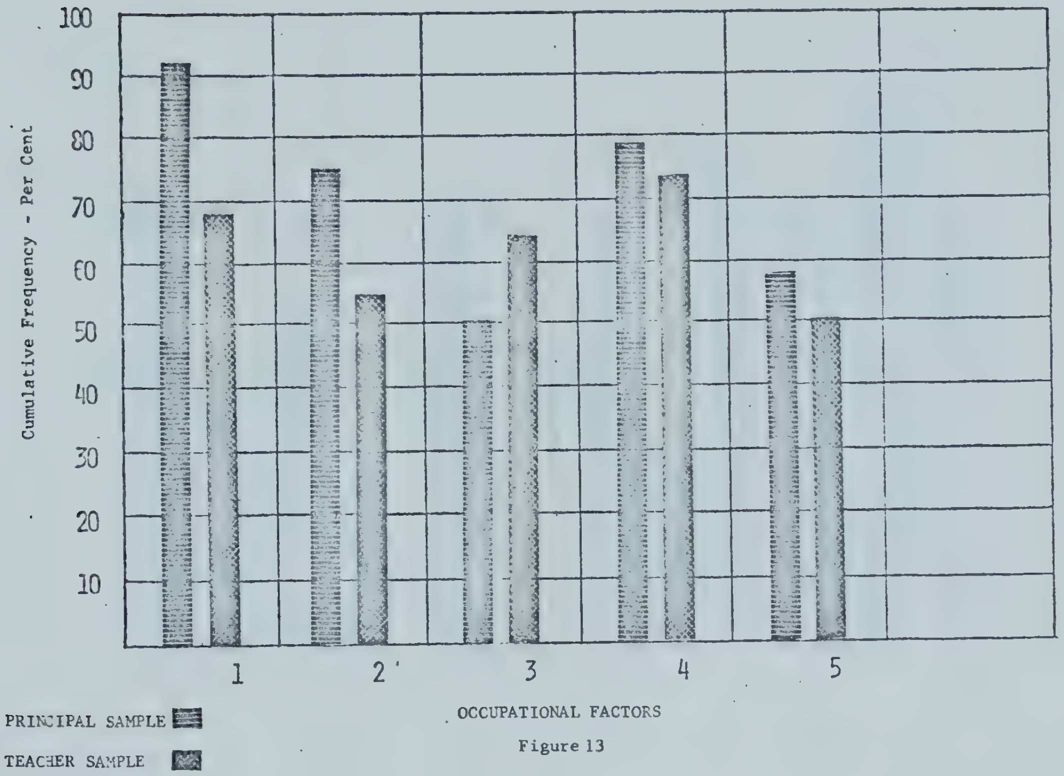


Figure 13

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND "SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY COMMUNITY FACTORS

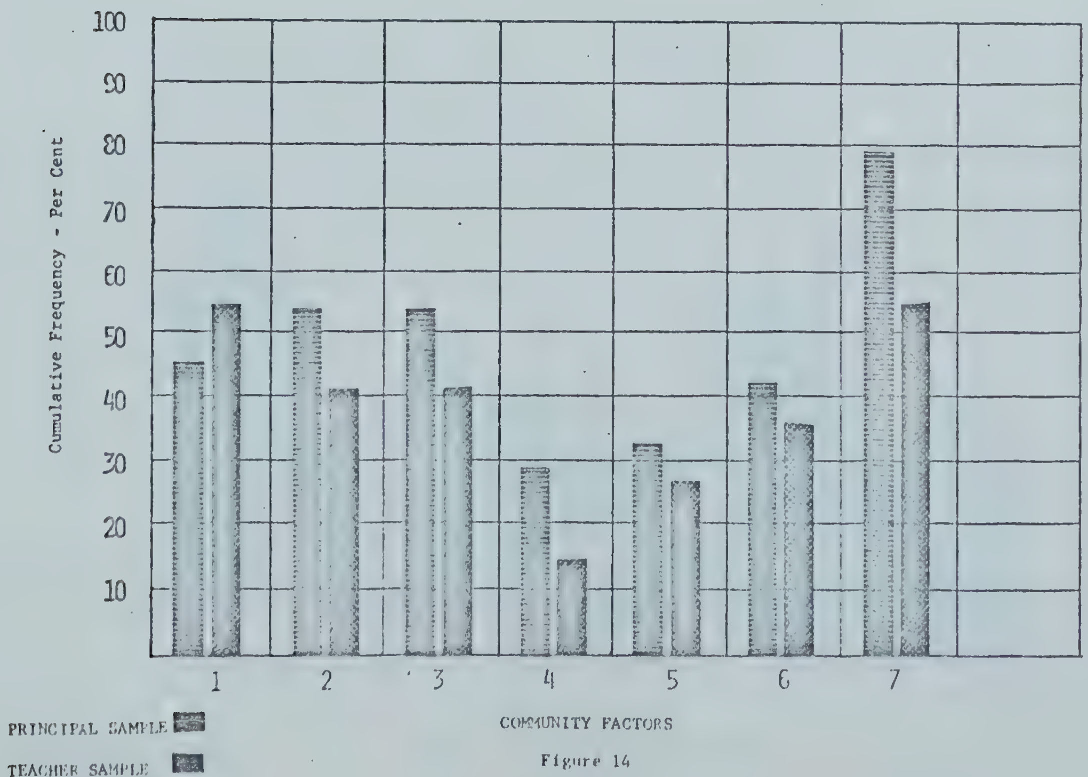
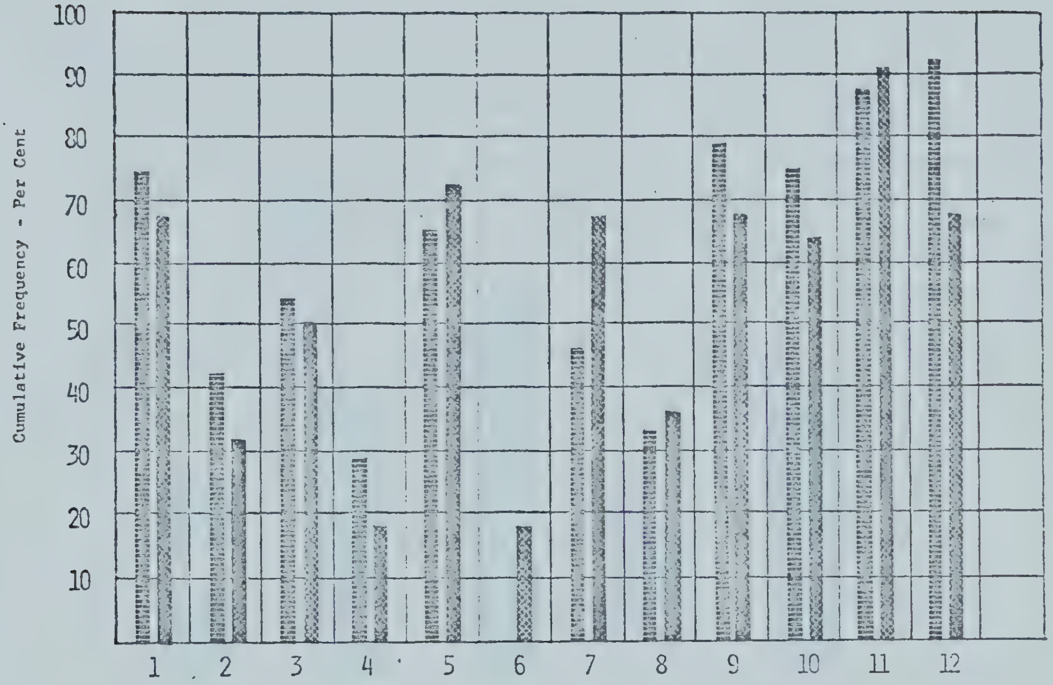


Figure 14

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY STUDENT FACTORS



PRINCIPAL SAMPLE

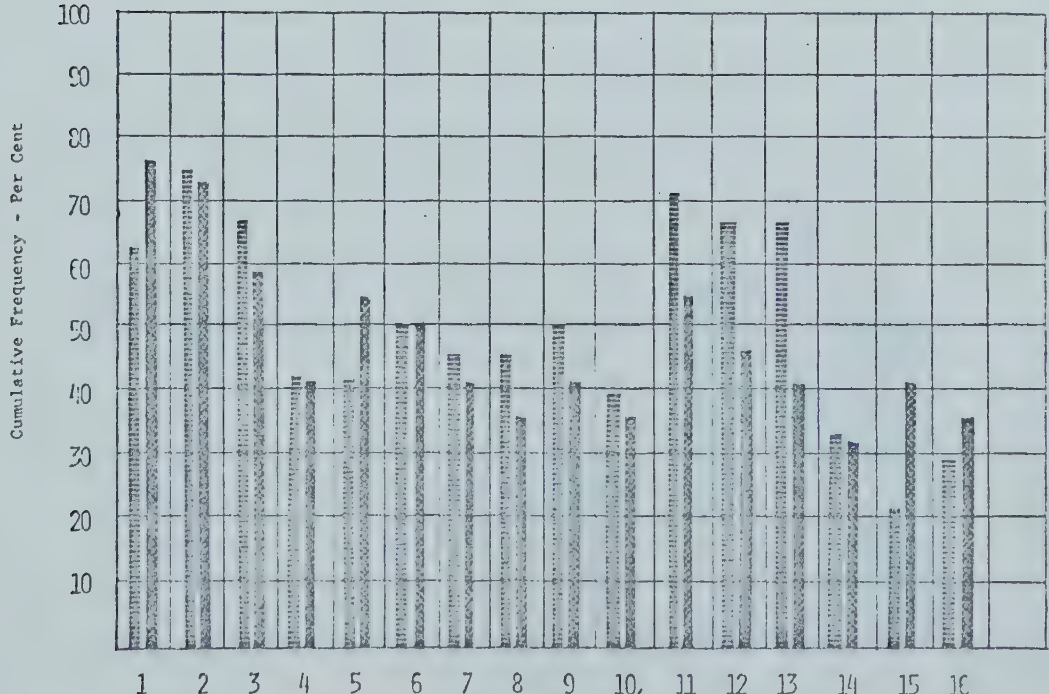
TEACHER SAMPLE

STUDENT FACTORS

Figure 15

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY FACILITIES AND EQUIPMENT FACTORS



FACILITIES AND EQUIPMENT FACTORS

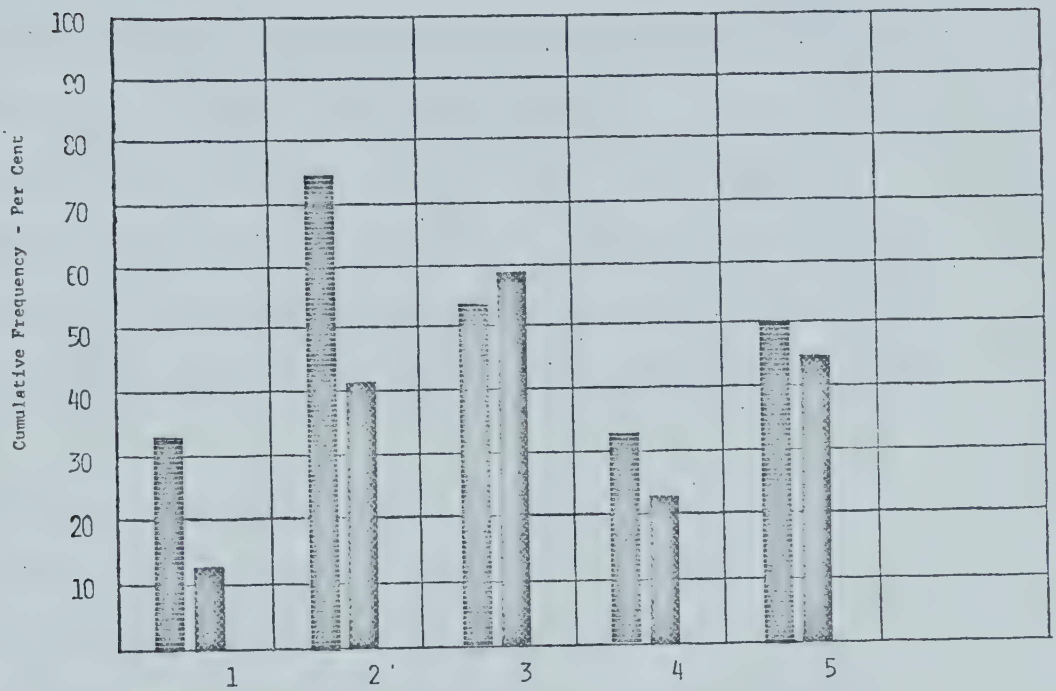
PRINCIPAL SAMPLE

TEACHER SAMPLE

Figure 16

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY COUNSELLING FACTORS



PRINCIPAL SAMPLE

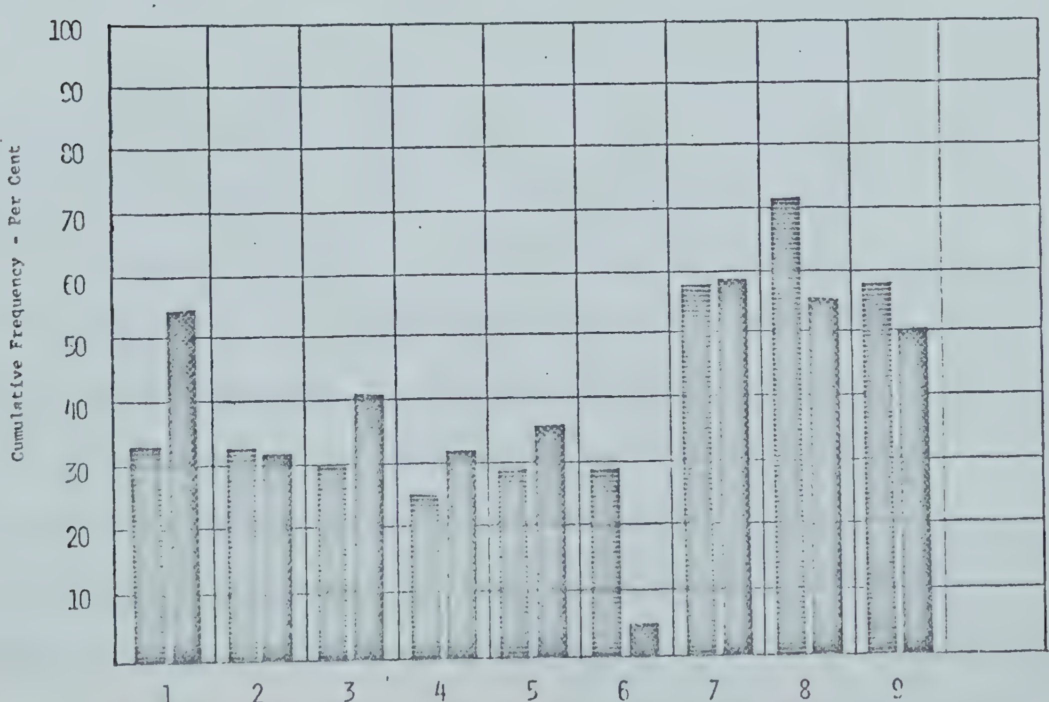
TEACHER SAMPLE

COUNSELLING FACTORS

Figure 17

DISTRIBUTION OF "IMPORTANT" RESPONSES (PRINCIPAL SAMPLE) AND

"SIGNIFICANT INFLUENCE" RESPONSES (TEACHER SAMPLE) BY POLICIES FACTORS



PRINCIPAL SAMPLE

TEACHER SAMPLE

POLICIES FACTORS

Figure 18

The evaluation component which interacts with the operational factors, and importance or influence elements in each model, may vary according to the local educational system and contains only those factors which represent a high or fairly high degree of significance in influencing utilization in the one instance, and in importance to evaluating utilization of surveyed facilities in the other instance, by over 50 percent of the respondents in each survey.

The synthesizing process of the micro and macro model culminates with one cube which contains the four evaluation dimensions initially included in the first two models. The operational dimension is modified somewhat to contain only the elements for each activity which evolved from the synthesis, while the third dimension takes on the function of implementation without which an evaluation of utilization cannot be effected. The design which is used for the implementation dimension in this model is modified from Stufflebeam's system (page 14) and interacts with the evaluation dimension and operational dimension to form a model for evaluating utilization of facilities (Figure 19).

While basically, the interaction between the components of evaluation and the elements of implementation are not new in concept, the combination of reaction on factors related to utilization of facilities as identified in this study, hopefully will offer a new "sense of direction" for the evaluation of utilization of facilities provided for educational purposes.

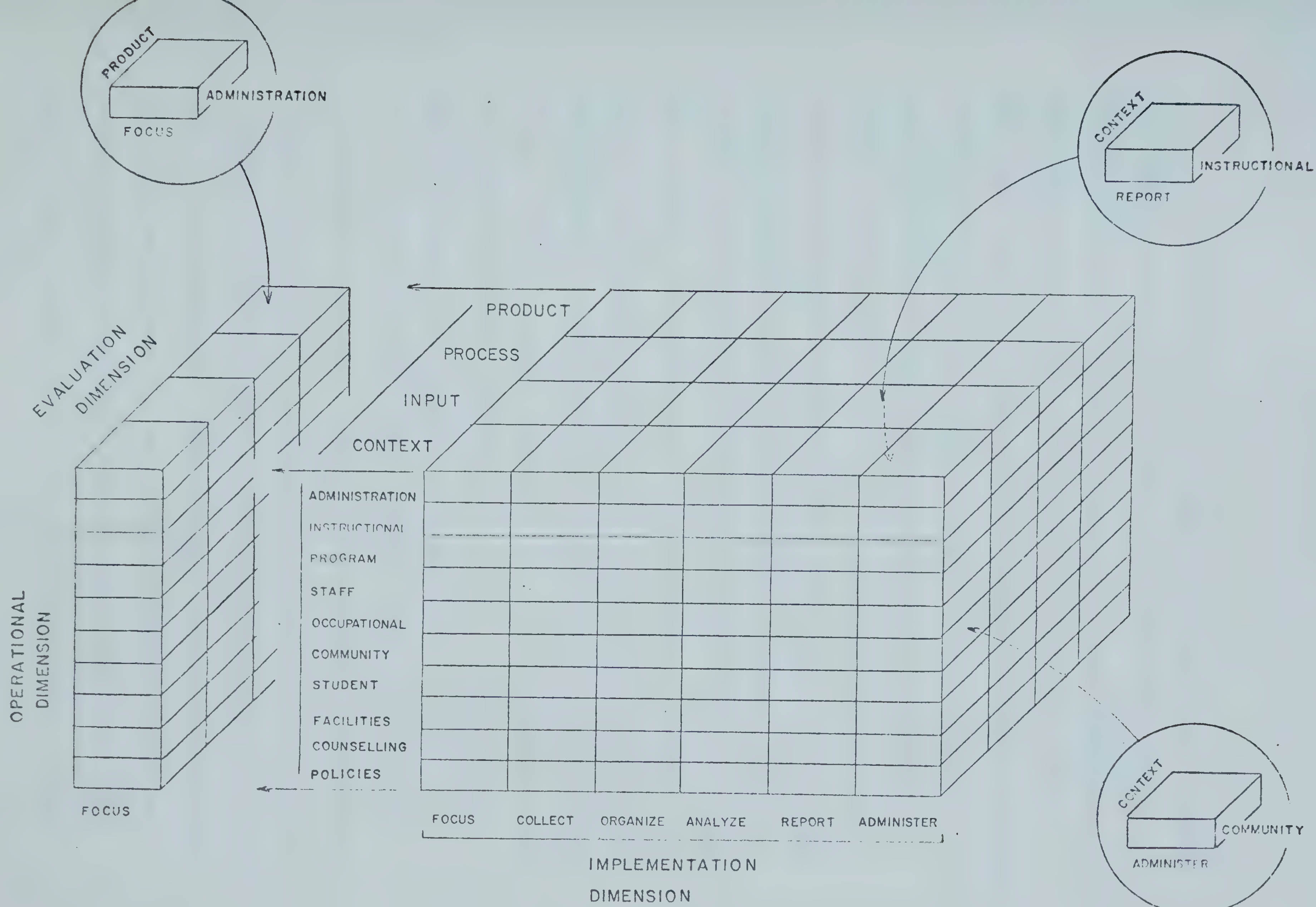

PRODUCT
ADMINISTRATION
FOCUS
CONTEXT
INSTRUCTIONAL
REPORT
EVALUATION
DIMENSION
PRODUCT
PROCESS
INPUT
CONTEXT
ADMINISTRATION
INSTRUCTIONAL
PROGRAM
STAFF
OCCUPATIONAL
COMMUNITY
STUDENT
FACILITIES
COUNSELLING
POLICIES
OPERATIONAL
DIMENSION
FOCUS
FOCUS
COLLECT
ORGANIZE
ANALYZE
REPORT
ADMINISTER
IMPLEMENTATION
DIMENSION
CONTEXT
COMMUNITY
ADMINISTER

Figure 19

Operationally, the utilization model can be used either as a means of evaluating one specific evaluation dimension or all dimensions. If the evaluation involves the context dimension, the interactions in the cells of the first row would be examined. More specifically, the interaction which occurs in the cell denoted by the context, community, administer axis would involve the aspects of administering a context evaluation of the community factors related to the operation of an educational institution. To evaluate the context component of utilization, all the related factors in the operational dimension would be examined using the elements of implementation included in the third dimension. This would involve an analysis of each of the operational factors based on the evaluation-implementation matrix shown in Figure 20. The dimensions of this matrix include Stufflebeam's Context, Input, Process, Product Evaluation Model (CIPP) and his design to implement evaluation and are referred to as the evaluation dimension and the implementation dimension, respectively.

The components of the evaluation dimension consist of (1) the context evaluation component which identifies environmental elements of evaluation, (2) the input evaluation component which identifies the human and material resources elements of evaluation, (3) the process evaluation component which identifies the elements that should be monitored in the evaluation process and (4) the product evaluation component which identifies the elements that may be critical in determining the effectiveness of the program.

EVALUATION - IMPLEMENTATION MATRIX

IMPLEMENTATION DIMENSION

EVALUATION DIMENSION	FOCUSING THE EVALUATION	COLLECTION OF INFORMATION	ORGANIZATION OF INFORMATION	ANALYSIS OF INFORMATION	REPORTING OF INFORMATION	ADMINISTRATION OF EVALUATION
CONTEXT	1. Economy 2. Population 3. Labour markets 4. Educational opportunities 5. Financing 6. Community interest 7. Leadership roles	1. Research	1. Tables 2. Graphs 3. Projections 4. Crossbreaks	1. Relationship between variables 2. Comparison 3. Identify ideal solution and compare to actual characteristics	1. Thesis 2. Brochures 3. Forecasts 4. Programs 5. Master plan	1. Federal 2. Provincial 3. Local Board
INPUT	1. Policy 2. Plant 3. Staff 4. Equipment 5. Supplies 6. Communications 7. Transportation 8. Students	1. Testing 2. Questionnaire 3. Records 4. Iventories 5. Interviews	1. Crossbreaks 2. Graphs 3. Projections 4. Capacities	1. Profiles 2. Cost effectiveness	1. Reports 2. Forecasts 3. Inventory 4. Guidelines for planning	1. Local School
PROCESS	1. Administration 2. In-service training 3. Teacher supervision 4. Allocation of funds 5. Advisory committees 6. Pupil grouping	1. Records 2. Minutes 3. Inventories	1. Time lines or log 2. Procedures documents 3. Critical path	1. Philosophy 2. Constraints	1. Programs 2. Services 3. Recommendations	1. Local School
PRODUCT	1. Student proficiency 2. Program holding power 3. Nature of placement 4. Rapidity of initial placement 5. Student performance rating by employees	1. Testing 2. Observational techniques 3. Questionnaire 4. Attitude scale 5. Inventories 6. Interviews 7. Records	1. Tables 2. Crossbreaks 3. Graphs 4. Context, input, process outcome 5. Overall effectiveness 6. Data processing storage, and retrieval	1. Profiles 2. Compare preproject and postproject performance 3. Judgemental weightings	1. Future goals 2. Success in placement 3. Follow up report 4. Reports	1. School 2. Students 3. Business 4. Parents 5. Outside experts

FIGURE 20

The implementation dimension includes the design for implementing an evaluation, the components of which define the parameters for (1) focusing the evaluation, (2) collection of information, (3) organization of information, (4) analysis of information, (5) reporting of information, (6) administration of evaluation. Procedures for diagnosing each component of the evaluation dimension are based on the following:

Focusing the Evaluation

1. Identification of the major levels of decision-making which are to be served
2. Projection of the decision situations which are to be served for each level of decision-making
3. Definition of criteria for the decision situation by specification of variables for measurement and standards to be used in assessing alternatives
4. Definition of policies for operation of the evaluation

Data Collection

1. Specification of information collection source
2. Specification of data collection methods and devices
3. Specification of procedures for sampling
4. Specification for information collection conditions and schedules

Data Organization

1. Provision of a data collection format
2. Designation of coding, organizing, storing and information retrieval procedures

Data Analysis

1. Selection for procedures for analyzing
2. Designation of means for analyzing

Data Reporting

1. Definition of recipients of evaluation reports
2. Specification of information dissemination methods
3. Specification of evaluation report format
4. Dissemination of information schedule

Administration of the Evaluation

1. Summarization of evaluation schedules
2. Definition of resource requirements and recommendations for meeting them
3. Specification for meeting policy requirements
4. Evaluation of the potential for validity, reliability, creditability, timelines, and pervasiveness of the evaluation
5. Specification for periodic updating of evaluation
6. Provision of a budget for evaluation

Although Stufflebeam's CIPP Evaluation Model and his design to implement an evaluation were used for the dimensions of this matrix (Figure 20), the specific elements which comprise the body of the matrix were obtained from the literature of scholars (chapter II) who wrote on the subject of evaluation. By compartmentalizing the various aspects of evaluation into the components of the evaluation dimension and associating the elements involved, with the specifics of the evaluation design identified as the implementation dimension, the researcher formulated the evaluation-implementation

matrix which appears in Figure 20.

To effect an evaluation of any one of the evaluation dimensions or only one of the operational dimensions, the same procedure would be used in relation to the factors which have been identified as significant to an evaluation of utilization of the building construction program.

RECOMMENDATION

Insofar as this study attempted to identify the factors which affect the utilization of facilities provided for the building construction program and developed a model for the evaluation of utilization of such facilities, extensions of this investigation might include the following:

1. A replication of the study to facilities provided for other industrial-vocational programs and perhaps to space provided for academic programs.
2. The scope of this study was not extended into the testing stage since that would involve another in-depth survey of educational personnel at all the levels of the system. On the basis of the findings of this study such a research would not be impossible. It is recommended, however, that tests be made initially involving only one operational dimension.
3. The utilization model provides a basis for evaluating operational dimensions separately by interaction between the selected dimension and each of the evaluation dimension

components over all the implemtation elements. Using the factors within the operational dimensions which were found to be of importance to an evaluation of building construction facilitities, the specific characteristics of those factors which affect utilization of building construction facilities in either a positive or negative way could be determined.

4. Both the principal and teacher samples placed teacher competence on top of the list of importance in this study. This appears to suggest that the criteria which define teacher competence should be analyzed on a basis which is associated with utilization characteristics. An investigation to determine teacher competence criteria which facilitate optimal utilization of facilities, therefore,would be useful for teacher recruitment.

5. Recommendation 4 suggests that the characteristics of all the factors rated as important might be examined. Research directed towards a study of effectiveness criteria as it relates to the achievement of optimal utilization of facilities, therefore, might be warranted.

6. In view of possible future restrictions in financial allocations for industrial-vocational facilities, research related to the potential of utilizing space - previously assigned to specific programs - for joint purposes should be initiated.

BIBLIOGRAPHY

BIBLIOGRAPHY

BOOKS

Blum, Milton L. Industrial Psychology. Harper and Row, Publishers, 1968.

Campbell, R. F., and R. T. Gregg. Administrative Behavior in Education. Harper and Brothers Publisher, New York, 1957.

Canada, Department of Labour. Technical and Vocational Training Agreement. Ottawa, 1961.

Clark, D. L., and G. G. Guba. "An Examination of Potential Change Roles in Education." In: National Education Association Center for the Study of Instruction, Rational Planning in Curriculum and Instruction, Washington, D.C., 1967.

Doll, R. C. Curriculum Improvement: Decision-Making and Process. Boston: Allyn and Bacon Inc., 1965.

Fortune, J. C. "Introduction to Evaluation." In: A Guide to Evaluation, Massachusetts Information Feedback System for Vocational Education. First Technical Progress Report, Massachusetts Development, September, 1969.

MacConnell, J. D. Planning for School Buildings. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1957.

National Study of Secondary School Evaluation. Evaluation Criteria. Washington, D.C., 1960.

National Study of Secondary School Evaluation. Evaluation Criteria for Junior High Schools. Washington, D.C., 1963.

Oddie, Guy. School Building Resources and Their Effective Use. Organization for Economic Cooperation and Development, 1961.

PDK National Study Committee on Evaluation. Educational Evaluation and Decision Making. F. E. Peacock, Publishers, Inc., Itasca, Illinois, 1971.

Prakken, L. W. "Standards for Physical Facilities of School Shops Developed in Research Study." In: Modern School Shop Planning. Prakken Publications, Inc., Ann Arbor, Michigan, 1961.

Provus, M. Discrepancy Evaluation. McCutchan Publishing Corporation, 2526 Grove Street, Berkley, California 94704, 1971.

Rhodes, Eric, et al. "Recommended Facilities and Space Requirements." An Addendum to the Report, Recommended Occupational Curriculum Offerings. Arlington, Va., Educational Service Bureau Inc., 1965.

Scriven, M. "The Methodology of Evaluation." In: Tyler, R. W., et al., Perspectives of Curriculum Evaluation. Rand McNally and Co., Chicago, 1967.

Selltiz, C., et al. Research Methods in Social Relations. Henry Holt and Company, Inc., 1960.

Stake, R. E. "Towards a Technology for the Evaluation of Educational Programs." In: Tyler, R. W., et al., Perspective of Curriculum Evaluation. Chicago; Rand McNally and Company, 1967.

Stufflebeam, D. L., et al. Educational Evaluation - Decision Making. F. E. Peacock Publishers, Inc., Itasca, Illinois, 1971.

Wert, James E. Statistical Methods in Educational and Psychological Research. New York, Appleton-Century-Crafts, Inc., 1954.

ARTICLES AND PERIODICALS

Neal, W. D. "Evaluating a School's Program." In: Miklos, E., and A. N. Stewart., The Lecture Series. The Policy Committee, Leadership Course for School Principals, 1967.

Prueter, K. F. "Bridging the Gap Between Research and the Classroom." In: School Progress, Vol. 39, No. 10, October, 1970.

Robertson, A. G. "Applying Systems Analysis Techniques to the Evaluation of Vocational Programs." In: Journal of Industrial Education, Vol. 6, No. 3, Spring, 1969.

Stufflebeam, D. L. "A Depth Study of the Evaluation Requirement." In: Theory into Practice, Vol. 5, No. 3, pp. 121 - 133, June, 1966.

Swanson, L. "Program - Cost Analysis of Vocational Technical Education in a Junior College and in a Unified School District." In: Leadership, Functions, Procedures and Administration of Vocational Technical Agencies at the State Level, Vol. 3, March, 1969.

UNPUBLISHED MATERIALS

Cunningham, R. H. "Vocational Education Follow-Up." 1967

Ford, C. R. "Technical and Vocational Education." A paper presented at the Banff School of Fine Arts. Banff, Alberta, 1962

Hammond, R. L. "Evaluation at the Local Level." Project EPIC, 1967.

Hastings, T. "The Why of the Outcomes." A paper presented to American Education Research Association (AERA) Symposium of Measurement Problem in Curriculum Evaluation, February, 1965.

Kaufman, J. J. "Cost-Effectiveness Analysis as a Method for Evaluation of Vocational and Technical Education." A paper presented at the annual meeting of the American Vocational Association, Dallas, Texas, December 10, 1968.

Pace, C. R. "Evaluation Perspectives: 1968, A Working Paper unpublished in present form. University of California." A Guide to Evaluation, Massachusetts, Information Feedback System for Vocational Education, September, 1968.

Stufflebeam, Daniel L. "Evaluation as the Basis for Decision-Making." A paper presented to the American Educational Research Association, Chicago, Illinois, February 8, 1968.

Stufflebeam, D. L. "Evaluation as Enlightenment for Decision-Making." An address delivered at the Working Conference on Assessment Theory, Sarasota, Florida, January 19, 1968.

APPENDIX A.

THIS APPENDIX CONTAINS SAMPLE COPIES
OF THE RESEARCH INSTRUMENTS FOR THE PRINCIPAL
SAMPLE AND THE BUILDING CONSTRUCTION TEACHER SAMPLE

SURVEY INSTRUMENT

TOPIC: A Model for Evaluating Utilization of Facilities Provided for Industrial - Vocational Education Programs

Directions to Participants

1. Please respond to each statement as directed in the explanatory note .

2. For purposes of this survey please interpret the following words or phrases (where used) as indicated here:

    (a) Influence - sufficient ability to produce some effect.

    (b) Facilities - space provided for instructional purposes in an industrial-vocational education program.

    (c) An Industrial Vocational Program - a program which offers training in industrial-vocational education where students develop entry skills in a trade or a technological pursuit.

    (d) Student Work Station - the total space and equipment necessary to accommodate one student for the purpose of performing all activities and experiments in the course.

    (e) Utilization - the extent to which a designated instructional area is used for the purpose it was provided, based on a comparison of possible utilization and actual utilization in terms of available student work stations and enrolment data.

3. To ensure that this survey may be completed according to schedule, please complete and return this instrument in the enclosed, stamped, self-addressed envelope by March 2, 1973.

THIS SURVEY INSTRUMENT HAS BEEN DESIGNED SO THAT THE RESULTS WILL PROVIDE SOME INFORMATION ON FACTORS WHICH MAY BE IMPORTANT TO EVALUATING THE UTILIZATION OF EDUCATIONAL FACILITIES.

PLEASE EXAMINE THE STATEMENTS BELOW AND INDICATE BY AN (X) IN THE PARENTHESES UNDER THE APPROPRIATE NUMBER, THE DEGREE OF IMPORTANCE YOU PERCEIVE EACH TO HAVE IN EVALUATING THE UTILIZATION OF HIGH SCHOOL INDUSTRIAL VOCATIONAL BUILDING CONSTRUCTION FACILITIES.

YOUR RESPONSE SHOULD BE BASED ON THE FOLLOWING VALUES WHERE THE NUMBER 5 REPRESENTS THE HIGHEST DEGREE OF IMPORTANCE TO 0 WHICH REPRESENTS NO IMPORTANCE AT ALL.

5 - A HIGH DEGREE OF IMPORTANCE

4 - A FAIRLY HIGH DEGREE OF IMPORTANCE

3 - A MEDIUM DEGREE OF IMPORTANCE

2 - A FAIRLY LOW DEGREE OF IMPORTANCE

1 - A LOW DEGREE OF IMPORTANCE

0 - NO IMPORTANCE

EXAMPLES:

	5	4	3	2	1	0
1. PROGRAM HOLDING POWER	( )	(X)	( )	( )	( )	( )
2. STAFF DEVELOPMENT PROGRAM	( )	( )	(X)	( )	( )	( )

NOTE: UTILIZATION DENOTES THE EXTENT TO WHICH A DESIGNATED INSTRUCTIONAL AREA IS USED FOR THE PURPOSE IT WAS PROVIDED. i.e. THE EXTENT TO WHICH THE BUILDING CONSTRUCTION AREA IS USED FOR BUILDING CONSTRUCTION PROGRAM PURPOSES. WHAT DEGREE OF IMPORTANCE DO YOU PERCEIVE EACH FACTOR TO HAVE IN EVALUATING UTILIZATION OF THE DESIGNATED AREA?

A. Administrative Factors	5	4	3	2	1	0
1. Leadership technique.	( )	( )	( )	( )	( )	( )
2. Decision making procedures.	( )	( )	( )	( )	( )	( )
3. Interstaff communication.	( )	( )	( )	( )	( )	( )
4. Educational philosophy of the principal in relation to the vocational program.	( )	( )	( )	( )	( )	( )
5. Administrative planning in the activities related to the building construction program.	( )	( )	( )	( )	( )	( )
6. Organizing ability to fulfill educational goals.	( )	( )	( )	( )	( )	( )
7. Evaluation procedures which the administrative staff uses to measure the achievement of organizational goals.	( )	( )	( )	( )	( )	( )
8. Success in coordinating school activities.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
Administrative Factors (continued)						
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes.	( )	( )	( )	( )	( )	( )
10. The level of professional preparation of personnel appointed to administrative positions.	( )	( )	( )	( )	( )	( )
Instructional Factors						
1. The instructional methods used by the instructor.	( )	( )	( )	( )	( )	( )
2. The instructional load (number of courses) of the instructor.	( )	( )	( )	( )	( )	( )
3. The class size assigned to the instructor.	( )	( )	( )	( )	( )	( )
4. The suitability of student work station arrangement.	( )	( )	( )	( )	( )	( )
5. The suitability of arrangement of job areas for specialized activities.	( )	( )	( )	( )	( )	( )
6. Grouping of students (i.e. homogeneously, heterogeneously, randomly.)	( )	( )	( )	( )	( )	( )
7. The adequacy of expendable instructional materials provided in the school.	( )	( )	( )	( )	( )	( )
8. Course scheduling.	( )	( )	( )	( )	( )	( )
9. Length of class periods.	( )	( )	( )	( )	( )	( )
10. Student participation in planning learning activities.	( )	( )	( )	( )	( )	( )
11. The effect of student participation in extra-curricular activities.	( )	( )	( )	( )	( )	( )
Program Factors						
1. The credit value assigned to a specific building construction course.	( )	( )	( )	( )	( )	( )
2. The entrance prerequiste of the program.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
C. <u>Program Factors</u> (continued)						
3. The rate of student drop-out at any specific level.	( )	( )	( )	( )	( )	( )
4. The purpose of the course - whether it is used as an optional subject or for skill training purposes.	( )	( )	( )	( )	( )	( )
5. Program promotion by the school.	( )	( )	( )	( )	( )	( )
6. Availability of programs to all students (both boys and girls) having the required prerequisites.	( )	( )	( )	( )	( )	( )
7. Means of integrating other courses with the building construction program.	( )	( )	( )	( )	( )	( )
8. The criteria which are used to evaluate student performance.	( )	( )	( )	( )	( )	( )
9. The existence of other competitive educational opportunities.	( )	( )	( )	( )	( )	( )
D. <u>Staff Factors</u>						
1. Teacher competence in the program (based on knowledge of the subject and teaching ability.)	( )	( )	( )	( )	( )	( )
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association.	( )	( )	( )	( )	( )	( )
3. Teacher participation in curriculum development.	( )	( )	( )	( )	( )	( )
4. A teacher in-service training program.	( )	( )	( )	( )	( )	( )
5. Staff awareness of the nature of the building construction program.	( )	( )	( )	( )	( )	( )
6. Anticipated results of the program as perceived by the teacher.	( )	( )	( )	( )	( )	( )
7. Professional cooperation of the teacher with his colleagues.	( )	( )	( )	( )	( )	( )
8. The availability of qualified instructors.	( )	( )	( )	( )	( )	( )
E. <u>Occupational Factors</u>						
1. Occupational opportunities for the student in the building construction program upon graduation.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
E. <u>Occupational Factors</u> (continued)						
2. The significance industry places on training in building construction as a prerequisite for employment.	( )	( )	( )	( )	( )	( )
3. Financial remuneration for graduates upon employment.	( )	( )	( )	( )	( )	( )
4. Student success in finding employment upon graduation from the building construction program.	( )	( )	( )	( )	( )	( )
5. The existence of other competitive occupational opportunities.	( )	( )	( )	( )	( )	( )
F. <u>Community Factors</u>						
1. The socio-economic environment of the individual student.	( )	( )	( )	( )	( )	( )
2. The industrial resources of the community.	( )	( )	( )	( )	( )	( )
3. The employability of the student in the immediate community.	( )	( )	( )	( )	( )	( )
4. The role which advisory board recommendations play in curriculum development.	( )	( )	( )	( )	( )	( )
5. The standard of achievement which the industry sets for employment.	( )	( )	( )	( )	( )	( )
6. Industrial community support in encouraging enrolment in the building construction program.	( )	( )	( )	( )	( )	( )
7. Parental encouragement for students to enrol in the building construction program.	( )	( )	( )	( )	( )	( )
G. <u>Student Factors</u>						
1. Availability of guidance staff to assist in making a program choice.	( )	( )	( )	( )	( )	( )
2. The chronological age of the student.	( )	( )	( )	( )	( )	( )
3. The apparent student capability in making a career choice at the high school level.	( )	( )	( )	( )	( )	( )
4. Student enrolment projections.	( )	( )	( )	( )	( )	( )
5. Student competence resulting from instruction.	( )	( )	( )	( )	( )	( )
6. Financial resources of the student.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
G. Student Factors (continued)						
7. General student achievement.	( )	( )	( )	( )	( )	( )
8. Mental ability of the student.	( )	( )	( )	( )	( )	( )
9. Student aptitude.	( )	( )	( )	( )	( )	( )
10. Student work habits.	( )	( )	( )	( )	( )	( )
11. Student attitude towards the building construction program.	( )	( )	( )	( )	( )	( )
12. Opportunity given students to select program based on their own interests.	( )	( )	( )	( )	( )	( )
H. Facilities and Equipment Factors						
1. Adequacy of size of the building.	( )	( )	( )	( )	( )	( )
2. Availability of sufficient equipment for the building construction program.	( )	( )	( )	( )	( )	( )
3. General lighting standards.	( )	( )	( )	( )	( )	( )
4. Standard of auditory comfort.	( )	( )	( )	( )	( )	( )
5. Room temperature.	( )	( )	( )	( )	( )	( )
6. Ventilation in the room designated for the building construction program.	( )	( )	( )	( )	( )	( )
7. Adequacy of plumbing facilities (Wash area, glue area, etc.)	( )	( )	( )	( )	( )	( )
8. Availability and distribution of utility services. (Gas, water, electricity, compressed air, etc.)	( )	( )	( )	( )	( )	( )
9. Adequacy of disposal system for waste material created in the building construction area. (Saw dust, cuttings, fluids, etc.)	( )	( )	( )	( )	( )	( )
10. Proximity of vocational facilities to the academic instructional area.	( )	( )	( )	( )	( )	( )
11. Provision of safety equipment.	( )	( )	( )	( )	( )	( )
12. Availability of first aid facilities.	( )	( )	( )	( )	( )	( )
13. Adequacy of fire protection.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
H. Facilities and Equipment Factors						
14. Availability of building construction facilities and equipment to students outside the regular class time.	( )	( )	( )	( )	( )	( )
15. Interior design and decor of the building construction facility.	( )	( )	( )	( )	( )	( )
16. Provision of security for projects, personal belongings, etc., in the designated area.	( )	( )	( )	( )	( )	( )
I. Counselling Factors						
1. Availability of student records.	( )	( )	( )	( )	( )	( )
2. Accessability of job opportunity information to students.	( )	( )	( )	( )	( )	( )
3. Adequacy of student selection procedures for entrance into the building construction program.	( )	( )	( )	( )	( )	( )
4. The source where recommendation to provide specific programs in the school usually originate.	( )	( )	( )	( )	( )	( )
5. The source where recommendations to the student to enrol in a program usually originate.	( )	( )	( )	( )	( )	( )
J. Policies Factors						
1. The definition of policies concerning activities related to the building construction program.(i.e. work experience, industrial tours, etc.)	( )	( )	( )	( )	( )	( )
2. The procedures used in formulating policies for the school.	( )	( )	( )	( )	( )	( )
3. Protection of building construction staff from exploitation by individuals in the school and agencies of the community.	( )	( )	( )	( )	( )	( )
4. Protection of building construction students from exploitation.	( )	( )	( )	( )	( )	( )
5. The extent to which regulations concerning the building construction area are adhered to by all staff members.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
J. Policies Factors (continued)						
6. Policies concerning inspection of facilities and equipment by local school authorities.	( )	( )	( )	( )	( )	( )
7. Materials purchasing policies.	( )	( )	( )	( )	( )	( )
8. Policies concerning equipment replacement.	( )	( )	( )	( )	( )	( )
9. Policies concerning educational success standards for the building construction program.	( )	( )	( )	( )	( )	( )

COMMENTS: PLEASE INCLUDE ANY ADDITIONAL COMMENTS ABOUT ANY OF THE ABOVE SUB-HEADINGS THAT YOU THINK WILL ADD TO THE COMPLETENESS OF THIS RESEARCH.

SURVEY INSTRUMENT

TOPIC: A Model for Evaluating Utilization of Facilities Provided for Industrial - Vocational Education Programs

Directions to Participants

1. This survey instrument consists of three parts. Please respond to each statement as directed in the explanatory note provided for each part.

2. For purposes of this survey please interpret the following words or phrases (where used) as indicated here:

   (a) Influence - sufficient ability to produce some effect.

   (b) Facilities - space provided for instructional purposes in an industrial-vocational education program.

   (c) An Industrial Vocational Program - a program which offers training in industrial-vocational education where students develop entry skills in a trade or a technological pursuit.

   (d) Student Work Station - the total space and equipment necessary to accommodate one student for the purpose of performing all activities and experiments in the course.

   (e) Utilization - the extent to which a designated instructional area is used for the purpose it was provided, based on a comparison of possible utilization and actual utilization in terms of available student work stations and enrolment data.

3. To ensure that this survey may be completed according to schedule, please complete and return this instrument in the enclosed, stamped, self-addressed envelope by March 2, 1973.

PART 1 - THIS HAS BEEN DESIGNED SO THAT THE RESULTS WILL PROVIDE SOME INFORMATION ON FACTORS WHICH MAY INFLUENCE THE UTILIZATION OF EDUCATIONAL FACILITIES.

PLEASE EXAMINE THE STATEMENTS BELOW AND INDICATE BY AN (X) IN THE PARENTHESES UNDER THE APPROPRIATE NUMBER THE DEGREE OF INFLUENCE EACH HAS, IN YOUR OPINION, ON THE UTILIZATION OF HIGH SCHOOL INDUSTRIAL-VOCATIONAL BUILDING CONSTRUCTION FACILITIES.

YOUR RESPONSE SHOULD BE BASED ON THE FOLLOWING VALUES WHERE THE NUMBER 5 REPRESENTS THE HIGHEST DEGREE OF INFLUENCE TO 0 WHICH REPRESENTS NO INFLUENCE AT ALL.

5 - A HIGH DEGREE OF INFLUENCE	2 - A FAIRLY LOW DEGREE OF INFLUENCE
4 - A FAIRLY HIGH DEGREE OF INFLUENCE	1 - A LOW DEGREE OF INFLUENCE
3 - A MEDIUM DEGREE OF INFLUENCE	0 - NO INFLUENCE

EXAMPLES:

	5	4	3	2	1	0
1. STAFF DEVELOPMENT PROGRAM	( )	( )	(X)	( )	( )	( )
2. PROGRAM HOLDING POWER	(X)	( )	( )	( )	( )	( )

NOTE: UTILIZATION DENOTES THE EXTENT TO WHICH A DESIGNATED INSTRUCTIONAL AREA IS USED FOR THE PURPOSE IT WAS PROVIDED. i.e. THE EXTENT TO WHICH THE BUILDING CONSTRUCTION AREA IS USED FOR BUILDING CONSTRUCTION PROGRAM PURPOSES. WHAT DEGREE OF INFLUENCE DO YOU PERCEIVE EACH FACTOR TO HAVE ON UTILIZATION OF THE DESIGNATED AREA?

A. Administrative Factors	5	4	3	2	1	0
1. Leadership technique.	( )	( )	( )	( )	( )	( )
2. Decision making procedures.	( )	( )	( )	( )	( )	( )
3. Interstaff communication.	( )	( )	( )	( )	( )	( )
4. Educational philosophy of the principal in relation to the vocational program.	( )	( )	( )	( )	( )	( )
5. Administrative planning in the activities related to the building construction program.	( )	( )	( )	( )	( )	( )
6. Organizing ability to fulfill educational goals.	( )	( )	( )	( )	( )	( )
7. Evaluation procedures which the administrative staff uses to measure the achievement of organizational goals.	( )	( )	( )	( )	( )	( )
8. Success in coordinating school activities.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
A. Administrative Factors (continued)						
9. The apparent resourcefulness with which the administrative staff allocates funds for budget purposes.	( )	( )	( )	( )	( )	( )
10. The level of professional preparation of personnel appointed to administrative positions.	( )	( )	( )	( )	( )	( )
B. Instructional Factors						
1. The instructional methods used by the instructor.	( )	( )	( )	( )	( )	( )
2. The instructional load (number of courses) of the instructor.	( )	( )	( )	( )	( )	( )
3. The class size assigned to the instructor.	( )	( )	( )	( )	( )	( )
4. The suitability of student work station arrangement.	( )	( )	( )	( )	( )	( )
5. The suitability of arrangement of job areas for specialized activities.	( )	( )	( )	( )	( )	( )
6. Grouping of students (i.e. homogeneously, heterogeneously, randomly.)	( )	( )	( )	( )	( )	( )
7. The adequacy of expendable instructional materials provided in the school.	( )	( )	( )	( )	( )	( )
8. Course scheduling.	( )	( )	( )	( )	( )	( )
9. Length of class periods.	( )	( )	( )	( )	( )	( )
10. Student participation in planning learning activities.	( )	( )	( )	( )	( )	( )
11. The effect of student participation in extra-curricular activities.	( )	( )	( )	( )	( )	( )
C. Program Factors						
1. The credit value assigned to a specific building construction course.	( )	( )	( )	( )	( )	( )
2. The entrance prerequiste of the program.	( )	( )	( )	( )	( )	( )

C. Program Factors (continued)

	5	4	3	2	1	0
3. The rate of student drop-out at any specific level.	( )	( )	( )	( )	( )	( )
4. The purpose of the course - whether it is used as an optional subject or for skill training purposes.	( )	( )	( )	( )	( )	( )
5. Program promotion by the school.	( )	( )	( )	( )	( )	( )
6. Availability of programs to all students (both boys and girls) having the required prerequisites.	( )	( )	( )	( )	( )	( )
7. Means of integrating other courses with the building construction program.	( )	( )	( )	( )	( )	( )
8. The criteria which are used to evaluate student performance.	( )	( )	( )	( )	( )	( )
9. The existence of other competitive educational opportunities.	( )	( )	( )	( )	( )	( )

D. Staff Factors

	5	4	3	2	1	0
1. Teacher competence in the program (based on knowledge of the subject and teaching ability.)	( )	( )	( )	( )	( )	( )
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association.	( )	( )	( )	( )	( )	( )
3. Teacher participation in curriculum development.	( )	( )	( )	( )	( )	( )
4. A teacher in-service training program.	( )	( )	( )	( )	( )	( )
5. Staff awareness of the nature of the building construction program.	( )	( )	( )	( )	( )	( )
6. Anticipated results of the program as perceived by the teacher.	( )	( )	( )	( )	( )	( )
7. Professional cooperation of the teacher with his colleagues.	( )	( )	( )	( )	( )	( )
8. The availability of qualified instructors.	( )	( )	( )	( )	( )	( )

E. Occupational Factors

	5	4	3	2	1	0
1. Occupational opportunities for the student in the building construction program upon graduation.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
E. Occupational Factors (continued)						
2. The significance industry places on training in building construction as a prerequisite for employment.	( )	( )	( )	( )	( )	( )
3. Financial remuneration for graduates upon employment.	( )	( )	( )	( )	( )	( )
4. Student success in finding employment upon graduation from the building construction program.	( )	( )	( )	( )	( )	( )
5. The existence of other competitive occupational opportunities.	( )	( )	( )	( )	( )	( )
F. Community Factors						
1. The socio-economic environment of the individual student.	( )	( )	( )	( )	( )	( )
2. The industrial resources of the community.	( )	( )	( )	( )	( )	( )
3. The employability of the student in the immediate community.	( )	( )	( )	( )	( )	( )
4. The role which advisory board recommendations play in curriculum development.	( )	( )	( )	( )	( )	( )
5. The standard of achievement which the industry sets for employment.	( )	( )	( )	( )	( )	( )
6. Industrial community support in encouraging enrolment in the building construction program.	( )	( )	( )	( )	( )	( )
7. Parental encouragement for students to enrol in the building construction program.	( )	( )	( )	( )	( )	( )
G. Student Factors						
1. Availability of guidance staff to assist in making a program choice.	( )	( )	( )	( )	( )	( )
2. The chronological age of the student.	( )	( )	( )	( )	( )	( )
3. The apparent student capability in making a career choice at the high school level.	( )	( )	( )	( )	( )	( )
4. Student enrolment projections.	( )	( )	( )	( )	( )	( )
5. Student competence resulting from instruction.	( )	( )	( )	( )	( )	( )
6. Financial resources of the student.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
G. Student Factors (continued)						
7. General student achievement.	( )	( )	( )	( )	( )	( )
8. Mental ability of the student.	( )	( )	( )	( )	( )	( )
9. Student aptitude.	( )	( )	( )	( )	( )	( )
10. Student work habits.	( )	( )	( )	( )	( )	( )
11. Student attitude towards the building construction program.	( )	( )	( )	( )	( )	( )
12. Opportunity given students to select program based on their own interests.	( )	( )	( )	( )	( )	( )
H. Facilities and Equipment Factors						
1. Adequacy of size of the building.	( )	( )	( )	( )	( )	( )
2. Availability of sufficient equipment for the building construction program.	( )	( )	( )	( )	( )	( )
3. General lighting standards.	( )	( )	( )	( )	( )	( )
4. Standard of auditory comfort.	( )	( )	( )	( )	( )	( )
5. Room temperature.	( )	( )	( )	( )	( )	( )
6. Ventilation in the room designated for the building construction program.	( )	( )	( )	( )	( )	( )
7. Adequacy of plumbing facilities (Wash area, glue area, etc.)	( )	( )	( )	( )	( )	( )
8. Availability and distribution of utility services. (Gas, water, electricity, compressed air, etc.)	( )	( )	( )	( )	( )	( )
9. Adequacy of disposal system for waste material created in the building construction area. (Saw dust, cuttings, fluids, etc.)	( )	( )	( )	( )	( )	( )
10. Proximity of vocational facilities to the academic instructional area.	( )	( )	( )	( )	( )	( )
11. Provision of safety equipment.	( )	( )	( )	( )	( )	( )
12. Availability of first aid facilities.	( )	( )	( )	( )	( )	( )
13. Adequacy of fire protection.	( )	( )	( )	( )	( )	( )

	5	4	3	2	1	0
H. Facilities and Equipment Factors						
14. Availability of building construction facilities and equipment to students outside the regular class time.	( )	( )	( )	( )	( )	( )
15. Interior design and decor of the building construction facility.	( )	( )	( )	( )	( )	( )
16. Provision of security for projects, personal belongings, etc., in the designated area.	( )	( )	( )	( )	( )	( )
I. Counselling Factors						
1. Availability of student records.	( )	( )	( )	( )	( )	( )
2. Accessability of job opportunity information to students.	( )	( )	( )	( )	( )	( )
3. Adequacy of student selection procedures for entrance into the building construction program.	( )	( )	( )	( )	( )	( )
4. The source where recommendation to provide specific programs in the school usually originate.	( )	( )	( )	( )	( )	( )
5. The source where recommendations to the student to enrol in a program usually originate.	( )	( )	( )	( )	( )	( )
J. Policies Factors						
1. The definition of policies concerning activities related to the building construction program. (i.e. work experience, industrial tours, etc.)	( )	( )	( )	( )	( )	( )
2. The procedures used in formulating policies for the school.	( )	( )	( )	( )	( )	( )
3. Protection of building construction staff from exploitation by individuals in the school and agencies of the community.	( )	( )	( )	( )	( )	( )
4. Protection of building construction students from exploitation.	( )	( )	( )	( )	( )	( )
5. The extent to which regulations concerning the building construction area are adhered to by all staff members.	( )	( )	( )	( )	( )	( )

J. Policies Factors (continued)

	5	4	3	2	1	0
6. Policies concerning inspection of facilities and equipment by local school authorities.	( )	( )	( )	( )	( )	( )
7. Materials purchasing policies.	( )	( )	( )	( )	( )	( )
8. Policies concerning equipment replacement.	( )	( )	( )	( )	( )	( )
9. Policies concerning educational success standards for the building construction program.	( )	( )	( )	( )	( )	( )

PART 2 PLEASE SELECT THE WORD OR STATEMENT WHICH MOST NEARLY DESCRIBES HOW EACH FACTOR RELATES TO THE SITUATION AS IT EXISTS IN YOUR SCHOOL. INDICATE YOUR CHOICE BY PLACING AN (X) IN THE APPROPRIATE PARENTHESES.

EXAMPLE

1. Staff selection is made by:

a. School Board	a. ( )
b. Principal	b. (X)
c. other authority	c. ( )

A. Administrative Factors (Related to the principal and his administrative staff)

1. The Leadership Technique of the principal

a. Authoritarian	a. ( )
b. Democratic	b. ( )
c. "Laissez Faire"	c. ( )

2. Decisions involving policy formulation are

a. Almost always made only after those concerned have had an opportunity to voice their opinion on the question	a. ( )
b. occasionally made without those concerned having had an opportunity to voice their opinion on the question	b. ( )
c. almost always made without people concerned having had an opportunity to voice their opinion on the question	c. ( )

3. Interstaff communication practices are

a. adequate for efficient operation	a. ( )
b. sufficiently adequate to avoid major confusion	b. ( )
c. inadequate for efficient operation	c. ( )

4. The principal's educational philosophy as generally perceived by his staff is

a. well formulated	a. ( )

4. The principal's educational philosophy as generally perceived by his staff is (continued)

   b. formulated in some areas of education — b. ( )

   c. non-formulated — c. ( )

5. Planning activities

   a. almost all activities appear to be well organized — a. ( )

   b. some activities appear to be well organized — b. ( )

   c. very few activities appear to be well organized — c. ( )

6. The total school operation is organized to

   a. facilitate achievement of educational goals — a. ( )

   b. facilitate the achievement of educational goals and the satisfaction of personal needs of staff members — b. ( )

   c. facilitate the satisfaction of personal needs of staff members — c. ( )

7. Evaluation procedures of the administrative staff provide data upon which rational interpretations

   a. can usually be made to improve the program — a. ( )

   b. can sometimes be made to improve the program — b. ( )

   c. can seldom be made to improve the program — c. ( )

8. The contributions of people, materials and other resources are

   a. highly coordinated toward the achievement of a recognized purpose — a. ( )

   b. coordinated sufficiently to eliminate major confusion — b. ( )

   c. not very well coordinated toward achievement of any recognized purpose — c. ( )

9. Budgetary resourcefulness

   a. Funds are allocated primarily to new programs a. ( )

   b. Funds are allocated to both new and existing programs as required b. ( )

   c. Funds are allocated primarily to existing programs c. ( )

10. Professional preparation of administrative personnel is

   a. almost always reflected in practice a. ( )

   b. occasionally reflected in practice b. ( )

   c. almost never reflected in practice c. ( )

B. Instructional Factor

1. Your instructional methods

   a. include a high degree of visual aid support a. ( )

   b. include a medium degree of visual aid support b. ( )

   c. include a low degree of visual aid support c. ( )

2. Your instructional load involves

   a. the building construction program only a. ( )

   b. the building construction program plus other courses b. ( )

   c. mostly other courses c. ( )

3. Class sizes in building construction courses generally

   a. exceed number of student work stations (bench locations) a. ( )

   b. equal number of student work stations b. ( )

   c. are smaller than number of student work stations c. ( )

4. The student work station arrangement in the building construction area is

   a. suitable a. ( )

   b. fairly suitable b. ( )

   c. unsuitable c. ( )

5. Arrangement of job areas (machine areas, planning centre, etc.) in your shop appears to be

   a. suitable a. ( )

   b. fairly suitable b. ( )

   c. unsuitable c. ( )

6. Students enrolled in building construction courses are grouped

   a. homogeneously according to aptitude a. ( )

   b. heterogeneously according to aptitude b. ( )

   c. randomly c. ( )

7. Instructional materials services provided in your school are

   a. adequate a. ( )

   b. inadequate b. ( )

   c. non-existent c. ( )

8. Courses are scheduled to meet mostly the needs of

   a. the administrative function a. ( )

   b. instructor availability b. ( )

   c. student enrolment c. ( )

9. Length of class periods for building construction courses are

   a. very acceptable a. ( )

9. Length of class periods for building construction courses are (continued)

   b. acceptable b. ( )

   c. unacceptable c. ( )

10. Student participation in planning learning activities is

   a. extensive a. ( )

   b. limited b. ( )

   c. non-existent c. ( )

11. Student extra-curricular activities tend to

   a. interfere with student enrolment in the building construction program a. ( )

   b. promote student enrolment in the building construction program b. ( )

   c. have no effect on student enrolment in the building construction program c. ( )

C. Program Factors

1. The credit value assigned to each building construction course is generally

   a. excessive a. ( )

   b. acceptable b. ( )

   c. inadequate c. ( )

2. The entrance prerequisites to the building construction program are

   a. too high a. ( )

   b. acceptable b. ( )

   c. too low c. ( )

3. The student drop-out rate from the building construction program is highest in the

   a. first year a. ( )

   b. second year b. ( )

   c. third year c. ( )

4. Courses in the building construction program are used primarily as

   a. an option a. ( )

   b. an exploratory course b. ( )

   c. skill training c. ( )

5. The school as a community promotes the building construction program

   a. extensively a. ( )

   b. moderately b. ( )

   c. not at all c. ( )

6. The building construction program is available to

   a. almost all students, including girls, of high ability only a. ( )

   b. almost all students, including girls, of low ability only b. ( )

   c. almost all students including girls c. ( )

7. Each student's program is designed to give him

   a. a general education a. ( )

   b. specialized training in building construction b. ( )

   c. training without any particular plan c. ( )

8. Criteria which you use in evaluating student performance are

   a. mostly objective a. ( )

   b. mostly subjective b. ( )

   c. a balance between objective and subjective c. ( )

9. The existence of other educational opportunities have a

   a. detrimental effect on enrolments in this program a. ( )

   b. complementary effect on enrolments in this program b. ( )

   c. almost no effect on enrolments in this program c. ( )

D. Staff Factors

1. The general aspect of the building construction program in which you feel most competent is primarily

   a. theory a. ( )

   b. hand tools b. ( )

   c. machine tools c. ( )

2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association is

   a. almost always evident in your institution a. ( )

   b. sometimes evident in your institution b. ( )

   c. almost never evident in your institution c. ( )

3. Teachers are

   a. almost always participating in curriculum development a. ( )

   b. occasionally participating in curriculum development b. ( )

   c. almost never participating in curriculum development c. ( )

4. The teacher in-service training program is

   a. excellent a. ( )

   b. acceptable b. ( )

   c. non-existent c. ( )

5. Generally staff members are

   a. quite familiar with the purpose of the vocational program a. ( )

   b. somewhat familiar with the purpose of the vocational program b. ( )

   c. unfamiliar with the purpose of the vocational program c. ( )

6. As a result of your instruction in the building construction program you are primarily concerned with providing the student with

   a. job entry skills a. ( )

   b. exploratory experiences b. ( )

   c. a general education c. ( )

7. Professional cooperation between Vocational Staff and Academic Staff is

   a. excellent a. ( )

   b. good b. ( )

   c. poor c. ( )

8. The demand for qualified instructors in the building construction program apparently

   a. can be met easily a. ( )

   b. can be met with difficulty b. ( )

   c. cannot be met c. ( )

E. Occupational Factors

1. Occupational opportunities for high school graduates appear to be

   a. excellent a. ( )

   b. good b. ( )

   c. poor c. ( )

2. The significance industry places on training in building construction as a prerequisite for employment is

   a. excessive a. ( )

   b. acceptable b. ( )

   c. inadequate c. ( )

3. Financial remuneration for students upon employment in building construction based industries is

   a. excellent a. ( )

   b. good b. ( )

   c. poor c. ( )

4. Students graduating from the building construction program are known to find employment

   a. easily a. ( )

   b. with some difficulty b. ( )

   c. with great difficulty c. ( )

5. Occupational opportunities in building construction are

   a. more favorable compared to other occupations a. ( )

   b. less favorable compared to other occupations b. ( )

   c. equally favorable compared to other occupations c. ( )

F. Community Factors

1. Socio-economic environment of individual students in your school is

   a. above average — a. ( )

   b. average — b. ( )

   c. below average — c. ( )

2. The industrial resources of the community include

   a. mostly building construction based activities — a. ( )

   b. some building construction based activities — b. ( )

   c. few building construction based activities — c. ( )

3. Students enrolled in your program who proceed to obtain a journeyman's certificate are most likely to find employment

   a. in the community — a. ( )

   b. in the province of Alberta — b. ( )

   c. elsewhere in Canada — c. ( )

4. Advisory board recommendations play a

   a. major role in curriculum development — a. ( )

   b. minor role in curriculum development — b. ( )

   c. no role in curriculum development — c. ( )

5. The standard of achievement which the industrial community requires for employment

   a. journeyman's certificate — a. ( )

   b. high school graduation in building construction — b. ( )

   c. no certification — c. ( )

6. The support which the industrial community gives to enrolment in the building construction program is

   a. excellent a. ( )

   b. good b. ( )

   c. poor c. ( )

7. Parental encouragement for students to enrol in the building construction program is

   a. good a. ( )

   b. average b. ( )

   c. poor c. ( )

G. Student Factors

1. The availability of guidance staff to assist in making a program choice is

   a. adequate a. ( )

   b. inadequate b. ( )

   c. non-existent c. ( )

2. Chronological age of building construction students appears to be

   a. above normal for the course level a. ( )

   b. normal for the course level b. ( )

   c. below normal for the course level c. ( )

3. Student capability of making a career choice at the high school level

   a. highly capable a. ( )

   b. capable b. ( )

   c. incapable c. ( )

4. Student enrolment projections for the building construction program are usually

   a. accurate a. ( )

   b. almost accurate b. ( )

   c. inaccurate c. ( )

5. As a result of instruction in building construction, student competences are generally

   a. good a. ( )

   b. average b. ( )

   c. poor c. ( )

6. Financial resources of students are generally

   a. good a. ( )

   b. average b. ( )

   c. poor c. ( )

7. General building construction student achievement is

   a. good a. ( )

   b. average b. ( )

   c. poor c. ( )

8. Mental ability of students in the building construction program is generally

   a. high a. ( )

   b. medium b. ( )

   c. low c. ( )

9. The building construction student aptitude is generally

a. high a. ( )

b. average b. ( )

c. low c. ( )

10. Student work habits are

a. good a. ( )

b. average b. ( )

c. poor c. ( )

11. Student attitudes toward the building construction program are

a. good a. ( )

b. average b. ( )

c. poor c. ( )

12. Students are given an opportunity to elect to take the building construction course

a. almost always a. ( )

b. sometimes b. ( )

c. almost never c. ( )

H. Facilities and Equipment Factors (As related to the building construction area)

1. Adequacy of size of the facilities is

a. more than sufficient a. ( )

b. sufficient b. ( )

c. insufficient c. ( )

2. Availability of sufficient equipment for the building construction program

    a. more than adequate a. ( )

    b. adequate b. ( )

    c. inadequate c. ( )

3. General lighting standards

    a. exceptionally good a. ( )

    b. good b. ( )

    c. poor c. ( )

4. Standard of auditory comfort

    a. exceptionally good a. ( )

    b. good b. ( )

    c. poor c. ( )

5. Room temperature in the building construction area is generally

    a. very comfortable a. ( )

    b. acceptable b. ( )

    c. uncomfortable c. ( )

6. Ventilation in the building construction area is generally

    a. exceptionally good a. ( )

    b. good b. ( )

    c. poor c. ( )

7. Adequacy of plumbing facilities (wash area, glue area, etc.)

   a. more than adequate a. ( )

   b. adequate b. ( )

   c. inadequate c. ( )

8. Availability and distribution of services (gas, water, electricity, compressed air) in the building construction area are

   a. highly acceptable a. ( )

   b. acceptable b. ( )

   c. unacceptable c. ( )

9. Adequacy of disposal system for waste material (sawdust, cuttings, fluids, etc.)

   a. excellent a. ( )

   b. good b. ( )

   c. poor c. ( )

10. Proximity of facility to academic area

    a. in a building separate from academic area a. ( )

    b. adjacent to academic area in some building b. ( )

    c. mixed with academic area c. ( )

11. Provision of safety equipment

    a. more than adequate a. ( )

    b. adequate b. ( )

    c. inadequate c. ( )

12. Availability of first aid facilities

    a. readily available a. ( )

    b. sometimes available b. ( )

    c. never available c. ( )

13. Adequacy of fire protection

    a. highly adequate a. ( )

    b. adequate b. ( )

    c. inadequate c. ( )

14. Availability of building construction facilities to students at other than regular class times.

    a. readily available a. ( )

    b. sometimes available b. ( )

    c. never available c. ( )

15. Interior design and decor of the building construction area

    a. very acceptable a. ( )

    b. acceptable b. ( )

    c. unacceptable c. ( )

16. Provision of security for projects, personal belongings etc. is

    a. highly adequate a. ( )

    b. adequate b. ( )

    c. inadequate c. ( )

I. Counselling Factors

1. Student records play

   a. a very important part in selecting students for this program — a. ( )

   b. an important part in selecting students for this program — b. ( )

   c. an unimportant part in selecting students for this program — c. ( )

2. Information concerning job opportunities for graduates is usually

   a. distributed when available — a. ( )

   b. distributed upon request — b. ( )

   c. not available — c. ( )

3. The student entrance testing program for the building construction course in this school is

   a. adequate — a. ( )

   b. inadequate — b. ( )

   c. non-existent — c. ( )

4. The source of recommendations to provide specific programs in your school is usually

   a. an advisory committee — a. ( )

   b. the community — b. ( )

   c. the Department of Education — c. ( )

5. Students usually enrol in the building construction program upon

   a. parent's recommendation — a. ( )

5. Students usually enrol in the building construction program upon (continued)

   b. counsellor's recommendations b. ( )

   c. his own request c. ( )

J. Policy Factor

1. Policies involving activities related to the building construction program are defined

   a. clearly a. ( )

   b. vaguely b. ( )

   c. not at all c. ( )

2. Policies are formulated primarily through

   a. staff participation a. ( )

   b. local school administration and staff participation b. ( )

   c. local school administration c. ( )

3. Protection of building construction staff from exploitation by individuals and agencies of the community

   a. well protected a. ( )

   b. occasionally protected b. ( )

   c. no protection c. ( )

4. Protection of the building construction students from exploitation

   a. well protected a. ( )

   b. occasionally protected b. ( )

   c. almost no protection c. ( )

5. Regulations concerning the building construction area are

   a. strictly adhered to a. ( )

   b. sometimes adhered to b. ( )

   c. almost never adhered to c. ( )

6. Policies concerning inspection of facilities and equipment by local school authorities are

   a. adequate a. ( )

   b. inadequate b. ( )

   c. non-existent c. ( )

7. Materials purchasing policies are

   a. adequate a. ( )

   b. inadequate b. ( )

   c. non-existent c. ( )

8. Policies concerning equipment replacement for the building construction program are

   a. adequate a. ( )

   b. inadequate b. ( )

   c. non-existent c. ( )

9. Policies concerning educational success standards for a specific program are

   a. pre-determined a. ( )

   b. determined upon graduation of student b. ( )

   c. non-existent c. ( )

PART 3 PLEASE RESPOND TO THE FOLLOWING QUESTIONS AS DIRECTED.

1. What is the current enrolment and credit value for each of the building construction courses in which you instruct? Which programs are offered on a semester basis?

Building Construction

	12	15	22	25	32	25	Other
Enrolment							
Credits							
Semestered							

2. Highest degree which you hold? (Check one)

a. Doctor's ( )

b. Master's ( )

c. Bachelor's ( )

d. Other ( )

3. How many student stations are provided in your shop? ____________ (Student stations as defined on page 1.)

4. Number of years teaching experience in building construction?

- under 5 years ( )
- 5 to 15 years ( )
- over 15 years ( )

5. Number of years (one year=ten months or better) in the building construction industry.

- under 5 years ( )
- 5 to 15 years ( )
- over 15 years ( )

6.	Number of students enrolled in your school.	- under 300	( )
		- 300 to 500	( )
		- 500 to 1000	( )
		- over 1000	( )
7.	Do you hold a Journeyman's Certificate?	- Yes	( )
		- No	( )

COMMENTS: PLEASE INCLUDE ANY ADDITIONAL COMMENTS ABOUT ANY OF THE ABOVE SUB-HEADINGS THAT YOU THINK WILL ADD TO THE COMPLETENESS OF THIS RESEARCH.

APPENDIX B.

THIS APPENDIX CONTAINS THE WRITTEN COMMUNICATION WITH SUPERINTENDENTS, PRINCIPALS, AND BUILDING CONSTRUCTION TEACHERS

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

LETTER TO SUPERINTENDENT

Educators are constantly directing their efforts to improving operative effectiveness and efficiency of educational institutions. Although they are cognizant of the factors which influence optimal conditions, practitioners are frequently confronted with barriers which impede assessment potentials. In view of this situation and to facilitate the educator's undertaking, I am conducting a study which is intended to identify the specific factors which are essential to the evaluating of utilization of industrial-vocational education facilities.

To collect relevant data for this investigation two sample groups have been selected as participants. These two groups include:

1. All principals in schools of the Province of Alberta where a building construction program is offered.

2. All instructors in the Province of Alberta who are offering instruction in a building construction course.

Since these groups include some educators from your school system, I am soliciting your cooperation in granting the researcher the privilege of conducting a survey in your school(s). This will involve permitting your building construction teacher(s) and their administrator(s) to complete an appropriate research instrument.

Data generated by these instruments will be treated as privileged information available only to the researcher. An abstract of the findings for this study, however, will be made available to all participants.

To ensure that this study will progress as scheduled your consideration to a February 20, 1973, deadline is significant.

Your interest and cooperation in this study will be sincerely appreciated.

Sincerely,

John Hiebert

County of Ponoka No. 3

February 12, 1973

Mr. John Hiebert
Dept. of Industrial & Vocational Education
The University of Alberta
EDMONTON, Alberta

Dear Mr. Hiebert:

Re: Industrial and Vocational Survey

I have no objection to you conducting the above survey in Ponoka Composite High School. However you must contact the building construction teacher Mr. N. Miazga and the principal Mr. R. Petterson re their willingness to participate.

Yours truly,

B. Bodnaruk

B. Bodnaruk
Superintendent of Schools

BB/lw

c.c. N. Miazga
R. Petterson

County of Strathcona, No. 20

10426 · 81st. AVE • P.O. BOX 4010 • EDMONTON 60, ALTA • TELEPHONE 439-7351

February 12, 1973

Mr. John Hiebert
Faculty of Education
Dept. of Industrial & Vocational Education
The University of Alberta
Edmonton, Alberta T6G 0Y1

Dear Mr. Hiebert:

I have your letter of February 9, in which you request permission for participation of Salisbury Composite High School to complete your research instrument related to utilization of industrial-vocational education facilities.

Permission is granted. You may get in touch with Mr. George Kravetz, Principal, at 699 8816.

Yours very truly,

F. B. Facey

F. B. Facey
Superintendent of Schools

FBF/m

WETASKIWIN SCHOOL DISTRICT NO. 264

Administration Offices
Telephone 352-4792

Office of: Superintendent

P.O. Box 10
Wetaskiwin, Alberta

February 12, 1973

Mr. John Hiebert
Faculty of Education
The University of Alberta
Edmonton, Alberta
T6G 0Y1

Dear Sir:

This letter will give you permission to seek the relevant data for your study. The Principal of Wetaskiwin Composite High School is Mr. V. S. Shaw, P. O. Box 2019, Wetaskiwin, and the Building Construction instructor is Mr. H. Drinnan Wetaskiwin Composite High School, P. O. Box 2019, Wetaskiwin.

Yours truly,

R N Paton

R. N. Paton
Superintendent

RNP:pn

CC: V. S. Shaw, Mr. Drinnan.

CALGARY SCHOOL BOARD
CALGARY SCHOOL DISTRICT 19
EDUCATION CENTRE BUILDING
515 MACLEOD TRAIL S.E.
CALGARY, ALBERTA
T2G 2L9
TELEPHONE: 267-9910 (AREA CODE 403)

February 12, 1973

Mr. John Hiebert,
Faculty of Education,
Department of Industrial and
Vocational Education,
The University of Alberta,
EDMONTON, Alberta.
T6G 0Y1

Dear Mr. Hiebert:

SUBJECT: YOUR STUDY RELATED TO THE EVALUATION OF UTILIZATION OF INDUSTRIAL-VOCATIONAL EDUCATION

Thank you for your letter of February 9 in which you requested permission to conduct a survey in our schools.

I see no problem in this regard and suggest that you contact each school on an individual basis to solicit their co-operation in your venture. I assume that you have a list of the names of the schools, the principal and the Building Construction instructor. If not, please let me know and I will forward a list to you.

Yours very truly,

K. N. Beattie

K. N. Beattie,
Supervisor of Vocational Education.

jw

DRUMHELLER VALLEY SCHOOL DIVISION NO. 62

5TH STREET EAST PHONE 823-5131
P.O. Box 1839
DRUMHELLER, Alberta

MISS C. L. SINCLAIR
SECRETARY-TREASURER

L. E. HARDING
SUPERINTENDENT OF SCHOOLS

February 14, 1973.

Mr. John Hiebert,
Department of Industrial &
Vocational Education,
The University of Alberta,
Edmonton, Alberta.

Dear Mr. Hiebert:

I have asked the Principal of our Drumheller Composite High School and our Building Construction Teachers to cooperate with you in your proposed survey. We wish you success in your attempt to identify factors which will lead to more effective and efficient evaluation procedures. We would be most interested in receiving a summary of your findings on this topic.

Yours very truly,

L. E. Harding

Leonard E. Harding,
Superintendent of Schools.

c.c. Mr. Jerry Sacher - Principal - Drumheller Composite High School.
c.c. Mr. R. Hargreaves - Drumheller Composite High School.
c.c. Mr. R. Kessner " " "

LEH/ce.

SUPERINTENDENT OF SCHOOLS

February 15, 1973

Mr. John Hiebert,
Faculty of Education,
Department of Industrial
and Vocational Education,
The University of Alberta,
EDMONTON, Alberta.
T6G OY1

Dear Mr. Hiebert:

Permission is given for a researcher to approach building construction teachers and their administrators to complete an appropriat research instrument.

It is understood that the study is intended to identify the specific factors which are essential to the evaluating of utilization of industrial-vocational education facilities and we will look forwar to an abstract of the findings of the study when this becomes available.

Yours sincerely,

J. Van Tighem

J. V. Van Tighem,
Superintendent.

JVT/srd
cc Dr. J. A. Earle, Director of Education.
J. J. Nearing, Coordinator, Secondary Education.
D. D. Taylor, Principal, St. Francis High School.
J. Lencucha, Principal, Bishop Grandin High School.

County of Minburn, No. 27

OFFICE OF THE SUPERINTENDENT OF SCHOOLS

TELEPHONE 632-2082 P.O. BOX 550

Vegreville, Alberta

February 15, 1973

Mr. John Hiebert
Faculty of Education
Dept. of Industrial and Vocational Education
The University of Alberta
EDMONTON, Alberta

Dear Mr. Hiebert:

With respect to your letter dated February 9, 1973 approval is granted for you to conduct a survey in the Vegreville Composite High School at Vegreville, the only school in the County of Minburn where building construction is offered.

Yours truly

R. A. Gorrie

R. A. Gorrie
Superintendent of Schools

Lethbridge School District No. 51
433 - 15th ST. SOUTH
LETHBRIDGE, ALBERTA

February 19th, 1973

Mr. John Hiebert,
Dept. of Industrial and
Vocational Education,
Faculty of Education,
University of Alberta,
Edmonton, Alberta.

Dear Mr. Hiebert:

With respect to the study referred to in your letter of February 9th, this is to let you know that it will be quite in order for you to contact the principal of the Lethbridge Collegiate Institute, Mr. K. C. Sauer, with the view of carrying forward the study as outlined.

Mr. Sauer has indicated that he is prepared to cooperate with you.

Sincerely yours,

O. P. Larson,
Superintendent of Schools.

OPL/ab

MEDICINE HAT PUBLIC SCHOOLS
School District No. 76
ADMINISTRATION OFFICES
601 First Avenue S.W.
MEDICINE HAT, ALBERTA
T1A 4Y7

TELEPHONE 526-5931
AREA CODE 403

February 19, 1973

Mr. John Hiebert
Department of Industrial
and Vocational Education
University of Alberta
Edmonton, Alberta
T6G 0Y1

Dear Mr. Hiebert:

I have your letter in which you outline a proposal to make a study of the utilization of Industrial Vocational facilities. This will certainly be a most useful study for Alberta, and I am happy to say that you have permission to contact the principals in our school system where these facilities are located.

Yours sincerely,

F. M. Riddle

F. M. Riddle
Superintendent of Schools

FMR:crw

GRANDE PRAIRIE COMPOSITE HIGH SCHOOL

11202 - 104 Street
Grande Prairie, Alberta

T8V 2Z1

February 21, 1973

Mr. John Hiebert
Faculty of Education
Department of Industrial and Vocational Education
The University of Alberta
Edmonton, Alberta

Dear Mr. Hiebert:

In reply to your letter to Mr. Taylor of February 9, 1973, I would advise that our Building Construction teacher, Mr. Paton, and myself would be pleased to participate in such a study.

Yours truly,

L.G. Luders

L.G. Luders
Principal

he

EDMONTON PUBLIC SCHOOLS
10010 - 107A Avenue Edmonton Alberta T5H 0Z8 Telephone (403) 429-5621

March 2, 1973

Mr. W.A. Kiffiak,
Administrative Assistant,
Division of Field Experiences,
University of Alberta,
Edmonton, Alberta.

Dear Mr. Kiffiak:

RE: RESEARCH REQUEST - MR. JOHN HIEBERT

This project has been approved on a permissive basis following examination by our department. The principals of five schools have tentatively agreed to have the project conducted in their schools.

Mr. Hiebert should now contact the following principals to obtain final approval and to make the arrangements necessary for conducting the project:

Mr. M. Smeltzer, Principal, Harry Ainlay Composite High School
Mr. E. Meyer, Principal, Jasper Place Composite High School
Mr. D. Terriff, Principal, Victoria Composite High School
Mr. D. Stetsko, Principal, W.P. Wagner High School
Mr. R. Baker, Principal, M.E. LaZerte Composite High School

Sincerely,

Tom

Tom Blowers, Ph.D.
DIRECTOR - EDUCATION RESEARCH
EDMONTON PUBLIC SCHOOLS

TAB/ak

c.c. Dr. C. Preitz
Mr. J. Hiebert
Mr. M. Smeltzer
Mr. E. Meyer
Mr. D. Terriff
Mr. D. Stetsko
Mr. R. Baker
Mr. G. Sanders

COOPERATIVE ACTIVITIES PROGRAM

1. Nature of Activity (Check One)

Student Teaching Internship ______ Demonstration/Experimentation ______

Special Practicum ______ Research X

2. Organization to be Involved

Edmonton Public School System X County of Strathcona X

Edmonton Separate School System X St. Albert Protestant/Separate

N.A.I.T. ______ School System ______

U. of A. Faculty of ______ Other ______

3. Requestor (staff member)

Name Dr. C.H. Preitz Position Associate Professor Date February 13, 1973

Request made on behalf of Mr. John Hiebert

4. Description of Activity - Include title, objectives, procedure, evaluation, techniques, etc.

Title: A Model for Evaluating Utilization of Facilities Provided for Industrial-Vocational Education Programs

Objectives: Major objective - To develop a model that might be used to evaluate the utilization of facilities used for secondary school industrial-vocational education programs

Procedure: Two sample groups have been selected from a population of all school systems in the Province of Alberta where programs in secondary industrial vocational education are taught. These include:

Sample 1. All principals of comprehensive high schools in the Province of Alberta where a course in industrial-vocational building construction is taught.

Sample 2. All instructors in comprehensive high schools in the Province of Alberta who teach a course on industrial-vocational building construction.

After an intensive review of the literature, two survey instruments were designed to identify elements of the school operation which may account for the extent to which facilities are used. (In this case building construction

facilities) The instrument for sample 1 is intended to measure the degree of importance the selected factors have on the evaluation of utilization of high school industrial-vocational building construction facilities. The instrument for sample 2 is intended to measure the degree of influence each factor has on the utilization of high school industrial-vocational building construction facilities. Also, participants in sample 2 are asked to provide some information concerning their facility as it relates to the selected factors. An analysis of the data provided by the survey instruments will yield either commonalities or disparities and the extent of each.

Evaluation: The analysed data will be applied to Stufflebeam's CIPP model to determine significant aspects for evaluation procedures and to identify specific factors which may be relevant to evaluating the utilization of building construction facilities.

Basic Techniques:

1. Categorize the elements related to school operations into types of evaluation (Stufflebeam's CIPP model) using a matrix system. - This is the macro model.

2. Identification of commonalities of opinions and operations related to utilization will be defined in a micro model.

3. A synthesis of the macro and micro model into a paradigm for evaluation of utilization of high school building construction facilities.

-2-

5. Anticipated value to requestor
Requestor serves as thesis supervisor to Mr. Hiebert. Data collected will be pertinent to Mr. Hiebert's Masters Thesis.

6. Anticipated value to cooperating organization
The completed study may be of value to the cooperating organization for assessing utilization of educational facilities and forecasting utilization, given certain conditions.

7. Estimate of cost (see renumeration guidelines)

8. Suggested personnel, schools and times

All building construction teachers in the cooperating organization and their principals. Time required for completion of building construction for teacher's survey instrument is approximately thirty minutes, and for the principal's survey instrument is approximately fifteen minutes.

For Office Use Only

Approved by [illegible] Division of Field Experiences Date Feb. 2[illegible]

Approved by Ron Pitzula E.C.S.S. Date March 1/7[illegible]

Subject to the following conditions:

(a) A report of the results of findings of this project is required by the cooperating school system (Check One) yes ☑ no ☐

(b) Other

SUPERINTENDENTS FROM THE FOLLOWING COUNTIES CONTACTED THE RESEARCHER BY TELEPHONE GRANTING HIM PERMISSION TO CONDUCT THE SURVEY FOR THIS STUDY IN THE COMPREHENSIVE HIGH SCHOOL LOCATED IN THEIR COUNTY

MR. F. BOULET
SUPERINTENDENT OF SCHOOLS
COUNTY OF ST. PAUL #19
ST. PAUL, ALBERTA

MR. F. P. FLANAGAN
SUPERINTENDENT OF SCHOOLS
COUNTY OF LACOMBE #14
LACOMBE, ALBERTA

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND
VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

QUALCUMQUE VERA

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G OY1

LETTER TO PRINCIPALS

A variety of factors have been found to influence the operative effectiveness and efficiency of educational institutions. While educators are constantly directing their efforts to this matter, their progress is frequently hampered by limitations inherent in the evaluation function. In an effort to develop some basis for assessment I am conducting a research investigation to identify those factors which are significant to the evaluation of utilization of industrial-vocational education facilities as they pertain to building construction.

To collect the data on which this research is based I have selected a list of factors which may have varying degrees of importance on evaluating utilization of educational facilities. Your opinion on the importance of each factor to such an assessment as it relates to building construction facilities would be extremely helpful. A survey instrument for this purpose is attached. Please complete each statement as directed and return the booklet in the self-addressed, stamped envelope by March 2, 1973. Approximately fifteen minutes should be sufficient to complete the instrument.

All data collected for the study will be treated as privileged information. At the completion of this study an abstract of the findings will be made available to all participants.

Your interest and cooperation in this study is sincerely appreciated.

Sincerely,

John Hiebert

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

QUAECUMQUE VERA

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

LETTER TO BUILDING CONSTRUCTION TEACHERS

A variety of factors have been found to influence the operative effectiveness and efficiency of educational institutions. While educators are constantly directing their efforts to this matter, their progress is frequently hampered by limitations inherent in the evaluation function.

In view of my involvement with facilities planning, I am conducting a research study to identify those factors which are significant to develop a model for evaluating the utilization of industrial-vocational education facilities. To collect pertinent data for this research I have developed a survey instrument designed to define the elements which influence the utilization of facilities provided for the building construction program.

As an instructor in this program you are no doubt familiar with a variety of factors which effect the utilization of facilities provided to accomplish program objectives. Your participation by comleting the enclosed survey instrument, therefore, would be sincerely appreciated. A maximum of thirty minutes should be sufficient to complete the research instrument involved. Upon completion please return the booklet in the self-addressed, stamped envelope by March 2, 1973.

The data you provide will be made available only to the researcher. A summary of the findings of this study, however, will be made available to all participants.

Your contribution is appreciated.

Sincerely,

John Hiebert

JH/dmh

FACULTY OF EDUCATION
DEPARTMENT OF INDUSTRIAL AND
VOCATIONAL EDUCATION
TELEPHONE (403) 432-3678

THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 0Y1

FOLLOW-UP LETTER TO

PRINCIPALS AND BUILDING

CONSTRUCTION TEACHERS

Recently a survey instrument intended to provide information to assess utilization of industrial-vocational education facilities was mailed to you.

In view of the importance of your professional judgement for purposes of this research and the deadline which has been set for completion, please take a few moments from your schedule to complete the survey instrument and return it immediately, if possible.

Hopefully the instrument has been planned so that the time you spend on it will be minimal.

Your contribution is imperative to the completion of this study and your response would be greatly appreciated.

Sincerely,

John Hiebert

APPENDIX C.

FREQUENCY OF RESPONSE DISTRIBUTION FOR THE PRINCIPAL SAMPLE AND BUILDING CONSTRUCTION TEACHER SAMPLE

DISTRIBUTION OF PRINCIPAL RESPONSES (SAMPLE 1)

BY HIGH SCHOOL OPERATIONAL ACTIVITIES AND THEIR IMPORTANCE TO

EVALUATING THE UTILIZATION OF BUILDING CONSTRUCTION FACILITIES

FACTOR STATEMENT	RATING FREQUENCY						FREQUENCY OF RATING BY PERCENTAGE					
		Important	Unimportant									
	5	4	3	2	1	0	5	4	3	2	1	0
A.												
1.	6	8	6	2		2	25.0	33.3	25.0	8.3		8.3
2.	7	8	6	2		1	29.2	33.3	25.0	8.3		4.2
3.	6	9	5	3		1	25.0	37.5	20.8	12.5		4.2
4.	14	7	2	1			58.3	29.2	8.3	4.2		
5.	8	9	4	1	2		33.3	37.5	16.7	4.2	8.3	
6.	5	12	7				20.8	50.0	29.2			
7.	3	10	6	2	2	1	12.5	41.7	25.0	8.3	8.3	4.2
8.	4	10	6	2	1	1	16.6	41.7	25.0	8.3	4.2	4.2
9.	6	7	8	2		1	25.0	29.2	33.3	8.3		4.2
10.	4	6	9	2	2	1	16.7	25.0	37.5	8.3	8.3	4.2
B.												
1.	10	10	3			1	41.7	41.7	12.4			4.2
2.	1	14	6	1	1	1	4.2	58.3	25.0	4.2	4.2	4.1
3.	3	15	5	1			12.5	62.5	20.8	4.2		
4.	6	10	5	3			25.0	41.7	20.8	12.5		
5.	5	10	6	3			20.8	41.7	25.0	12.5		
6.	2	3	10	7	1	1	8.3	12.5	41.6	29.2	4.2	4.2
7.	2	9	9	2	1	1	8.3	37.5	37.5	8.3	4.2	4.2
8.	5	10	8	1			20.8	41.7	33.3	4.2		
9.	4	8	8	1	2	1	16.7	33.3	33.3	4.2	8.3	4.2
10.	3	7	6	5	1	2	12.5	29.2	25.0	20.8	4.2	8.3
11.	1	1	4	8	7	3	4.2	4.2	16.7	33.3	29.2	12.4
C.												
1.	1	12	6	4		1	4.2	50.0	25.0	16.6		4.2
2.		6	10	4	3	1		25.0	41.7	16.7	12.4	4.2
3.	2	9	9	3		1	8.3	37.5	37.5	12.5		4.2
4.	7	11	4		1	1	29.2	45.8	16.6		4.2	4.2
5.	7	9	6	1		1	29.2	37.4	25.0	4.2		4.2
6.	3	13	5	1	1	1	12.5	54.2	20.7	4.2	4.2	4.2
7.	2	13	5	3	1		8.3	54.2	20.8	12.5	4.2	
8.	2	15	4	2		1	8.3	62.5	16.7	8.3		4.2
9.	5	7	6	5	1		20.8	29.2	25.0	20.8	4.2	

FACTOR STATEMENT	RATING FREQUENCY						FREQUENCY OF RATING BY PERCENTAGE					
		Important	Unimportant									
	5	4	3	2	1	0	5	4	3	2	1	0
D.												
1.	18	5				1	75.0	20.8				4.2
2.	5	10	4	3	1	1	20.8	41.7	16.7	12.4	4.2	4.2
3.	4	14	5			1	16.7	58.3	20.8			4.2
4.	2	5	13	3	1		8.3	20.8	54.2	12.5	4.2	
5.	2	13	7	1		1	8.3	54.2	29.1	4.2		4.2
6.	6	15	1	2			25.0	62.5	4.2	8.3		
7.	8	10	4	2			33.3	41.7	16.7	8.3		
8.	12	7	3		1	1	50.0	29.2	12.4		4.2	4.2
E.												
1.	8	14	1	1			33.3	58.3			4.2	4.2
2.	2	16	5	1			8.3	66.7	20.8	4.2		
3.	1	11	10		1	1	4.2	45.8	41.6	4.2	4.2	
4.	4	15	5				16.7	62.5	20.8			
5.	4	10	7	1	2		16.7	41.7	29.2	4.2	8.2	
F.												
1.		11	8	3		2		45.8	33.3	12.6		8.3
2.	1	12	7	1	2	1	4.2	50.0	29.2	4.2	8.2	4.2
3.		13	6	3	1	1		54.2	25.0	12.4	4.2	4.2
4.	1	6	7	4	4	2	4.2	25.0	29.2	16.7	16.6	8.3
5.	1	7	10	4	1	1	4.2	29.2	41.6	16.6	4.2	4.2
6.	1	9	9	3	1	1	4.2	37.5	37.5	12.4	4.2	4.2
7.	9	10	3	1		1	37.5	41.7	12.4	4.2		4.2
G.												
1.	7	11	5	1			29.2	45.8	20.8	4.2		
2.	3	7	6	4	2	2	12.5	29.2	25.0	16.7	8.3	8.3
3.	1	12	5	4	2		4.2	50.0	20.8	16.7	8.3	
4.	3	4	12	3	2		12.5	16.7	50.0	12.5	8.3	
5.	2	14	5	2		1	8.3	58.3	20.8	8.4		4.2
6.			9	5	6	4			37.5	20.8	25.0	16.7
7.	2	9	11	1	1		8.3	37.5	45.8	4.2	4.2	
8.	2	6	12	3	1		8.3	25.0	50.0	12.5	4.2	
9.	5	14	5				20.8	58.4	20.8			
10.	8	10	5	1			33.3	41.7	20.8	4.2		
11.	10	11	3				41.7	45.8	12.5			
12.	9	13	1	1			37.4	54.2	4.2	4.2		
H.												
1.	5	10	8	1			20.8	41.7	33.3	4.2		

FACTOR STATEMENT	RATING FREQUENCY Important		Unimportant				FREQUENCY OF RATING BY PERCENTAGE					
	5	4	3	2	1	0	5	4	3	2	1	0
2.	8	10	6				33.3	41.7	25.0			
3.	3	13	6	2			12.5	54.2	25.0	8.3		
4.	2	8	12	1	1		8.3	33.3	50.0	4.2	4.2	
5.	2	8	11	3			8.3	33.3	45.8	12.6		
6.	2	10	10	1	1		8.3	41.7	41.6	4.2	4.2	
7.	2	9	11		2		8.3	37.5	45.8		8.4	
8.	2	9	9	2	2		8.3	37.5	37.6	8.3	8.3	
9.	2	10	8	1	3		8.3	41.7	33.3	4.2	12.5	
10.	3	4	3	7	5	2	12.5	16.7	12.5	29.2	20.8	8.3
11.	6	11	2	3	2		25.0	45.8	8.3	12.5	8.4	
12.	7	9	3	1	4		29.2	37.5	12.5	4.2	16.6	
13.	7	9	2	4	2		29.2	37.5	8.3	16.7	8.3	
14.	3	5	8	6	2		12.5	20.8	33.3	25.0	8.4	
15.		5	6	7	4	2		20.8	25.0	29.2	16.7	8.3
16.	1	6	12	4		1	4.2	25.0	50.0	16.6		4.2
I.												
1.	1	7	10	3	2	1	4.2	29.2	41.7	12.5	8.3	4.2
2.	3	15	4	1		1	12.5	62.5	16.7	4.2		4.2
3.	4	9	8	2		1	16.7	37.5	33.3	8.3		4.2
4.	2	6	10	2	2	2	8.3	25.0	41.7	8.4	8.3	8.3
5.	5	7	8	3		1	20.8	29.2	33.3	12.5		4.2
J.												
1.	2	6	13	2		1	8.3	25.0	54.2	8.3		4.2
2.		8	10	4	1	1		33.3	41.7	16.6	4.2	4.2
3.	1	6	5	8	2	2	4.3	25.0	20.8	33.3	8.3	8.3
4.	1	5	6	8	3	1	4.2	20.8	25.0	33.3	12.5	4.2
5.	2	5	7	6	3	1	8.3	20.8	29.2	25.0	12.5	4.2
6.	2	5	5	5	4	3	8.3	20.8	20.8	20.8	16.8	12.5
7.	7	7	8		1	1	29.2	29.2	33.2		4.2	4.2
8.	4	13	4	2		1	16.7	54.2	16.7	8.2		4.2
9.	4	10	8	1		1	16.7	41.7	33.2	4.2		4.2

DISTRIBUTION OF TEACHER RESPONSES (SAMPLE 2)

BY HIGH SCHOOL OPERATIONAL ACTIVITIES AND THEIR

INFLUENCE ON THE UTILIZATION OF BUILDING CONSTRUCTION FACILITIES

FACTOR STATEMENT	RATING FREQUENCY Significant Influence		Insignificant Influence				FREQUENCY OF RATING BY PERCENTAGE					
	5	4	3	2	1	0	5	4	3	2	1	0
A.												
1.	6	11	3	1	1		27.4	50.0	13.6	4.5	4.5	
2.	7	10	3	1	1		31.9	45.5	13.6	4.5	4.5	
3.	1	5	7	6	2	1	4.5	22.7	31.9	27.3	9.1	4.5
4.	13	6	1		1	1	59.1	27.4	4.5		4.5	4.5
5.	2	6	7	5	2		9.1	27.3	31.8	22.7	9.1	
6.	4	8	5	3	2		18.2	36.4	22.7	13.6	9.1	
7.	2	2	8	6	4		9.1	9.1	36.3	27.3	18.2	
8.	1	4	13	3	1		4.5	18.2	59.2	13.6	4.5	
9.	3	10	6	2	1		13.6	45.5	27.3	9.1	4.5	
10.	2	8	7	3	2		9.1	36.4	31.8	13.6	9.1	
B.												
1.	10	8	3	1			45.5	36.4	13.6	4.5		
2.	10	6	6				45.5	36.4	13.6	4.5		
3.	9	8	4	1			40.9	36.4	18.2	4.5		
4.	7	5	5	4	1		31.9	22.7	22.7	18.2	4.5	
5.	5	7	6	4			22.7	31.8	27.3	18.2		
6.	3	5	6	4	2	2	13.6	22.7	27.3	18.2	9.1	9.1
7.	8	6	4	3	1		36.4	27.3	18.2	13.6	4.5	
8.	9	11		1	1		40.9	50.0		4.5	4.6	
9.	8	12	1	1			36.4	54.6	4.5	4.5		
10.	5	3	8	2	4		22.7	13.6	36.4	9.1	18.2	
11.	1	4	4	2	5	6	4.5	18.2	18.2	9.1	22.7	27.3
C.												
1.	4	7	7	3	1		18.2	31.8	31.8	13.6	4.6	
2.	2	5	8	3	3	1	9.1	22.7	36.4	13.6	13.6	4.6
3.	2	7	6	3	2	2	9.1	31.8	27.3	13.6	9.1	9.1
4.	4	8	10				18.2	36.4	45.4			
5.	7	12	3				31.8	54.5	13.7			
6.	3	6	8	2	2	1	13.6	27.3	36.4	9.1	9.1	4.5
7.	3	7	3	6	2	1	13.6	31.8	13.6	27.4	9.1	4.5
8.	4	5	6	4	2	1	18.2	22.7	27.3	18.2	9.1	4.5

FACTOR STATEMENT	RATING FREQUENCY						FREQUENCY OF RATING BY PERCENTAGE					
		Significant Influence	Insignificant Influence									
	5	4	3	2	1	0	5	4	3	2	1	0
9.	6	5	6	4	1		27.3	22.7	27.3	18.2	4.5	
D.												
1.	14	7		1			63.6	31.8		4.6		
2.	1	9	8	4			4.5	40.9	36.4	18.2		
3.	7	6	5	3	1		31.8	27.3	22.7	13.7	4.5	
4.	1	3	5	7	5	1	4.5	13.7	22.7	31.9	22.7	4.5
5.	1	10	6	1	4		4.5	45.5	27.3	4.5	18.2	
6.	4	8	8	2			18.2	36.4	36.3	9.1		
7.	3	9	9		1		13.6	40.9	40.9		4.6	
8.	11	6	2	1	1	1	50.0	27.3	9.2	4.5	4.5	4.5
E.												
1.	8	7	3	2		2	36.4	31.8	13.6	9.1		9.1
2.	2	10	6	3	1		9.1	45.5	27.3	13.6	4.5	
3.	3	11	5	3			13.6	50.0	22.8	13.6		
4.	5	11	3	1	2		22.7	50.0	13.7	4.5	9.1	
5.	1	10	7	1	3		4.5	45.5	31.8	4.5	13.7	
F.												
1.	1	11	8	1	1		4.5	50.0	36.5	4.5	4.5	
2.		9	5	4	4			40.9	22.7	18.2	18.2	
3.		9	7	5	1			40.9	31.8	22.8	4.5	
4.	1	2	6	9	2	2	4.5	9.1	27.3	40.9	9.1	9.1
5.	1	5	10	3	2	1	4.5	22.7	45.5	13.7	9.1	4.5
6.	3	5	10	2	2		13.6	22.7	45.5	9.1	9.1	
7.	4	8	7	3			18.2	36.4	31.8	13.6		
G.												
1.	3	12	3	1	3		13.6	54.5	13.6	4.6	13.7	
2.	1	6	10	2	3		4.5	27.3	45.5	9.1	13.6	
3.	1	10	7	2	2		4.5	45.5	31.8	9.1	9.1	
4.		4	7	6	4	1		18.2	31.8	27.3	18.2	4.5
5.	5	11	5		1		22.7	50.0	22.8		4.5	
6.		4	6	4	8			18.2	27.3	18.2	36.3	
7.	3	12	5	2			13.6	54.5	22.8	9.1		
8.	3	5	8	5	1		13.6	22.7	36.4	22.8	4.5	
9.	2	13	5	2			9.1	59.1	22.7	9.1		
10.	6	8	4	4			27.2	36.4	18.2	18.2		
11.	11	9	1	1			50.0	40.9	4.5	4.6		
12.	3	12	6	1			13.6	54.5	27.3	4.6		

FACTOR STATEMENT		RATING FREQUENCY Significant Influence		Insignificant Influence				FREQUENCY OF RATING BY PERCENTAGE					
		5	4	3	2	1	0	5	4	3	2	1	0
H.													
	1.	3	14	1	3	1		13.6	63.6	4.6	13.6	4.6	
	2.	6	10	5		1		27.3	45.5	22.7		4.5	
	3.	7	6	6		2	1	31.8	27.3	27.3		9.1	4.5
	4.	3	6	8	1	2	2	13.6	27.3	36.4	4.5	9.1	9.1
	5.	5	7	5	2	2	1	22.7	31.8	22.7	9.1	9.1	4.6
	6.	5	6	6	2	2	1	22.7	27.3	27.3	9.1	9.1	4.5
	7.	4	5	8	3	1	1	18.2	22.7	36.4	13.6	4.5	4.6
	8.	4	4	8	5	1		18.2	18.2	36.4	22.7	4.5	
	9.	4	5	4	4	3	2	18.2	22.7	18.2	18.2	13.6	9.1
	10.	3	5	4	5	4	1	13.6	22.7	18.2	22.7	18.2	4.6
	11.	8	4	4	5	1		36.4	18.2	18.2	22.7	4.5	
	12.	6	4	2	5	4	1	27.3	18.2	9.1	22.7	18.2	4.5
	13.	4	5	4	4	3	2	18.2	22.7	18.2	18.2	13.6	9.1
	14.	2	5	7	3	4	1	9.1	22.7	31.8	13.6	18.2	4.6
	15.	3	6	7	3	2	1	13.6	27.3	31.8	13.6	9.1	4.6
	16.	2	6	4	5	5		9.1	27.3	18.2	22.7	22.7	
I.	1.	1	2	9	7	2	1	4.5	9.1	40.9	31.8	9.1	4.6
	2.	2	7	8	4	1		9.1	31.8	36.4	18.2	4.5	
	3.	4	9	2	6	1		18.2	40.9	9.1	27.3	4.5	
	4.	1	4	8	7	2		4.5	18.2	36.4	31.8	9.1	
	5.	3	7	6	3	3		13.6	31.8	27.3	13.6	13.7	
J.													
	1.	2	10	4	5	1		9.1	45.5	18.2	22.7	4.5	
	2.	3	4	10	2	3		13.6	18.2	45.5	9.1	13.6	
	3.	2	7	3	4	4	2	9.1	31.8	13.6	18.2	18.2	9.1
	4.	4	3	5	5	3	2	18.2	13.6	22.7	22.7	13.6	9.2
	5.	5	3	5	6	2	1	22.7	13.6	22.7	27.3	9.1	4.6
	6.	1		8	8	3	2	4.5		36.4	36.4	13.6	9.1
	7.	5	8	3	4	2		22.7	36.4	13.6	18.2	9.1	
	8.	4	6	7	3	2		18.2	27.3	31.8	13.6	9.1	
	9.	3	8	5	5	1		13.6	36.4	22.7	22.7	4.6	

APPENDIX D.

TABULATION OF BUILDING CONSTRUCTION
TEACHER RESPONSES BY OPERATIONAL FACTORS

RESEARCH FINDINGS OF THE OPERATIONAL DIMENSIONS

The purpose of this section is to describe the operational dimensions, specifically related to the building construction program, which were generally reported to exist in participating comprehensive schools of Alberta where this program was taught.

The data reported here were obtained from part 2 of the survey made of the building construction teacher sample. Structurally, this part included the factor statement with a choice of three statements which described each factor. Participants were requested to select the statement which most nearly described the factor as it related to learning or extra-curricular activities in their school.

For comparative purposes, frequency distributions of responses from the building construction teacher were tabulated and analyzed to determine which statement was most frequently associated with each factor. If an equal number of respondents selected two different statements for one factor, both statements were tabulated.

This appendix summarizes the ratings of building construction teachers concerning the operational dimensions of cooperating schools in relation to the selected factors.

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY ADMINISTRATIVE FACTORS

	Factor	Response
1.	The leadership technique of the principal	Democratic
2.	Decisions involving policy formulation	Occasionally made without those concerned having had an opportunity to voice their opinion on the question
3.	Interstaff communication practices	Sufficiently adequate to avoid major confusion
4.	The principal's educational philosophy as generally perceived by his staff	Well formulated
5.	Planning activities	Almost all activities appear to be well organized
6.	The total school operation is organized to	Facilitate achievement of educational goals
7.	Evaluation procedures of the administrative staff provide data upon which rational interpretations	Can sometimes be made to improve the program
8.	The contributions of people, materials and other resources	Coordinated sufficiently to eliminate major confusion
9.	Budgetary resourcefulness	Funds are allocated to both new and existing programs as required
10.	Professional preparation of administrative personnel is	Occasionally reflected in practice

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY INSTRUCTIONAL FACTOR

	Factor	Response
1.	Instructional methods	Include a high degree of visual aid support
2.	Instructional load involves	The building construction program only
3.	Class sizes in building construction courses	Equal number of student work stations
4.	The student work station arrangement in the building construction area	Suitable
5.	Arrangement of job areas (machine areas, planning centre, etc.) in your shop	Suitable
6.	Students enrolled in building construction courses are grouped	Randomly
7.	Instructional materials services provided in your school	Adequate
8.	Courses are scheduled to meet mostly the needs of	Student Enrolment
9.	Length of class periods for building construction courses	Acceptable
10.	Student participation in planning learning activities	Limited
11.	Student extra-curricular activities	Have no effect on student enrolment in the building construction program

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY PROGRAM FACTORS

	Factor	Response
1.	The credit value assigned to each building construction course	Acceptable
2.	The entrance prerequisites to the building construction program	Acceptable
3.	The student drop-out rate where student drop-out rate is highest from the building construction program	First year
4.	Courses in the building construction program are used primarily as	Skill training
5.	The school as a community promotes the building construction program	Moderately
6.	The building construction program is available to	Almost all students including girls
7.	Each student's program is designed to give him	A general education or Specialized training in building construction
8.	Criteria which you use in evaluating student performance	A balance between objective and subjective
9.	The existence of other educational opportunities	Detrimental effect on enrolments in this program

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY STAFF FACTORS

Factor	Response
1. The general aspect of the building construction program in which you feel most competent	Theory
2. Staff professionalism (conduct, aims, qualities, etc.) as defined by the Alberta Teachers Association	Almost always evident in your institution
3. Teachers are	Occasionally participating in curriculum development
4. The teacher in-service training program	Non-existent
5. Generally staff members are	Somewhat familiar with the purpose of the vocational program
6. As a result of your instruction in the building construction program you are primarily concerned with providing the student with	Job entry skills
7. Professional cooperation between Vocational Staff and Academic Staff	Good
8. The demand for qualified instructors in the building construction program	Can be met with difficulty

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY OCCUPATIONAL FACTORS

Factors	Response
1. Occupational opportunities for high school graduates	Good
2. The significance industry places on training in building construction as a prerequisite for employment	Acceptable
3. Financial remuneration for students upon employment in building construction based industries	Good
4. Students graduating from the building construction program are known to find employment	Easily
5. Occupational opportunities in building construction	Equally favorable compared to other occupations

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY COMMUNITY FACTORS

Factor	Response
1. Socio-economic environment of individual students in your school	Average
2. The industrial resources of the community include	Some building construction based activities
3. Students enrolled in your program who proceed to obtain a journeyman's certificate are most likely to find employment	In the Province of Alberta
4. Advisory board recommendations play a	Minor role in curriculum development
5. The standard of achievement which the industrial community requires for employment	No certification
6. The support which the industrial community gives to enrolment in the building construction program	Good
7. Parental encouragement for students to enrol in the building construction program	Average (parents provide some encouragement)

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY STUDENT FACTORS

	Factor	Response
1.	The availability of guidance staff to assist in making a program choice	Adequate
2.	Chronological age of building construction students	Normal for the course level
3.	Student capability of making a career choice at the high school level	Capable
4.	Student enrolment projections for the building construction program	Almost accurate
5.	As a result of instruction in building construction, student competences are generally	Average
6.	Financial resources of students	Average
7.	General building construction student achievement	Average
8.	Mental ability of students in the building construction program	Medium
9.	The building construction student aptitude	Average
10.	Student work habits	Average
11.	Student attitudes toward the building construction program	Average
12.	Students are given an opportunity to elect to take the building construction course	Almost always

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY FACILITIES AND EQUIPMENT FACTORS

(AS RELATED TO THE BUILDING CONSTRUCTION AREA)

Factor	Response
1. Adequacy of size of the facilities is	Sufficient
2. Availability of sufficient equipment for the building construction program	Adequate
3. General lighting standards	Good
4. Standard of auditory comfort	Good
5. Room temperature in the building construction area	Acceptable
6. Ventilation in the building construction area	Good
7. Adequacy of plumbing facilities (wash area, glue area, etc.)	Adequate
8. Availability and distribution of services (gas, water, electricity, compressed air) in the building construction area.	Acceptable
9. Adequacy of disposal system for waste material (saw-dust, cuttings, fluids, etc.)	Good
10. Proximity of facility to academic area	Adjacent to academic area in the same building
11. Provision of safety equipment	Adequate
12. Availability of first aid facilities	Readily available
13. Adequacy of fire protection	Adequate

TABULATION OF BUILDING CONSTRUCTION TEACHER RESPONSES BY

FACILITIES AND EQUIPMENT FACTORS (CONTINUED)

	Factor	Response
14.	Availability of building construction facilities to students at other than regular class times	Sometimes available
15.	Interior design and decor of the building construction area	Acceptable
16.	Provision of security for projects, personal belongings etc.	Adequate

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY COUNSELLING FACTORS

Factor	Response
1. Student records play	An important part in selecting students for this program
2. Information concerning job opportunities for graduates is usually	Distributed when available
3. The student entrance testing program for the building construction course in this school	Non-existent
4. The source of recommendations to provide specific programs in your school	The Department of Education
5. Students usually enrol in the building construction program upon	His own request

TABULATION OF BUILDING CONSTRUCTION

TEACHER RESPONSES BY POLICY FACTOR

Factor	Response
1. Policies involving activities related to the building construction program are defined	Clearly
2. Policies are formulated primarily through	Local school administration and staff participation
3. Protection of building construction staff from exploitation by individuals and agencies of the community	Well protected
4. Protection of the building construction students from exploitation	Well protected
5. Regulations concerning the building construction area	Strictly adhered to
6. Policies concerning inspection of facilities and equipment by local school authorities	Adequate
7. Materials purchasing policies	Adequate
8. Policies concerning equipment replacement for the building construction program	Adequate
9. Policies concerning educational success standards for a specific program	Pre-determined